TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1901.

PART I.

BOSTON:
PRINTED FOR THE SOCIETY.
1902.

☞ SEE LAST PAGE OF COVER.

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The following lectures have been circulated to some extent in the form of slips reprinted from the reports made by the Secretary of the Society in the "Boston Evening Transcript." As here presented, the lectures are, as far as possible, printed in full, and reports of the discussions following the lectures are added, these, where it appeared necessary, having been carefully revised by the speakers.

The Committee on Lectures and Publication take this opportunity to repeat what they have before stated, that the Society is not to be held responsible for the certainty of the statements, the correctness of the opinions, or the accuracy of the nomenclature, in the lectures and discussions now or heretofore published, all of which must rest on the credit or judgment of the respective writers or speakers, the Society undertaking only to present these papers and discussions, or the substance of them, correctly.

AARON LOW,
J. H. BOWDITCH,
E. W. WOOD,
Committee on Lectures and Publication.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

SATURDAY, January 5, 1901.

A duly notified stated meeting of the Society was holden today at eleven o'clock.

In the absence of President FRANCIS H. APPLETON, by reason of illness, the chair was taken by Vice-President BENJAMIN P. WARE, who introduced the President-elect in the following remarks :—

In the absence of the President it becomes my duty to call this meeting to order. In entering into a new year and a new century we are reminded of the important work that this Society has accomplished since its organization, nearly seventy-two years ago. Beginning in a small way, by persistent effort in advancing the science and art of horticulture and agriculture, we have made great improvement in the varieties and quality of flowers, fruits, and vegetables, and have taken a position second to no other Horticultural Society in this country. We commence the century under hopeful auspices for continued success with a new President who comes to us with a lifelong successful experience as a horticulturist and farmer; also as President of the Worcester County Horticultural Society. It is with pleasure that I introduce to you my friend, your President-elect, O. B. Hadwen.

President Hadwen then delivered his inaugural address, as follows :

Address of President Hadwen.

Ladies and Gentlemen,

Members of the Massachusetts Horticultural Society:

May I extend to you all a happy greeting for the New Year, and express the wish that the usefulness of the Society may in the New Century not only equal but surpass that of the century now closing.

The result of your annual election calls me to a duty to which I had never aspired, and which I have never sought or expected. I do not regard my election as a compliment to myself, but rather as an expression of the wish of the members that the Society may continue under wholesome by-laws, which for many years have contributed to govern the Society, and to secure the confidence of its members in the progressive work which it was incorporated to carry forward, and we may be encouraged with the feeling that it may continue as in the many past years to promote the best interest pertaining to horticultural pursuits, and to advance the science and practice of horticulture within its jurisdiction.

I recall with very great significance the work that has been accomplished within the last fifty years in all departments of horticulture, and while our fields may not be as broad as at the start, it is a satisfaction to believe there is no end to horticultural advancement, as there is no end to nature's progress.

I come to discharge my official duties to the Society with but little experience in its administration, and with but little acquaintance with the varied and complicated questions which must necessarily arise during this year in changing from our old and venerated hall to the new one now in course of construction, and while the change is inevitable I can see no way but for each and every member of the Society to work in harmony and make the best of our situation, hoping that our efforts will be crowned with success, and remembering the noble men and great benefactors that have preceded us.

And should we not ascribe much of the achievements and prosperity of this Society, and the advances made towards the object for which it was incorporated, to the energy and zeal of the men and women who have proved their devotion to it for many years by their exhibitions of Fruits and Flowers and Vegetables?

Let me most sincerely thank you for the honor you have conferred upon me by asking me to preside over the deliberations of this Society the present year, following such a corps of noble men and women who have devoted their time and means to the development of horticulture, as a science and art since its incorporation.

Since that time an almost entire revolution has taken place in the principles and practice which has been brought out every year.

When the little colony of men who were the founders of the Massachusetts Horticultural Society held their first meeting on Feb. 24, 1829, they could but imperfectly realize the progress the Society would make in the seventy-two years of the nineteenth century, starting at a period when knowledge of the science and art of horticulture had barely dawned.

But they gave their energies to the progress of horticulture, and nearly three-quarters of the nineteenth century has marked an epoch in the science of horticulture, not only in this Commonwealth but over the whole country. An industry, vast in its extent, and accompanied by an intelligent knowledge previously not possessed in the growing of fruits, flowers, and vegetables that supply the demands and wants of an educated and discriminating people, has been built up.

It is seventy-two years since the first meeting of the Society, held on February 24, 1829.

On the 28th of April the Society voted to petition the legislature for an act of incorporation, which was granted, and approved June 12, 1829, by Levi Lincoln, Governor, authorizing the Society, to purchase and hold real estate to the amount of ten thousand dollars, and personal estate to the amount of twenty thousand dollars, which has been increased from time to time by legislative enactment to a million dollars.

The Society occupied and held its exhibitions in a number of halls, until, in 1845, it built its first Horticultural Hall on School Street, which, as time rolled on and horticultural progress increased, became crowded to such an extent that larger quarters were found imperative, and in 1865 this hall in which we are now assembled was finished and dedicated to the future use of the

Society. It is here in this temple dedicated to horticulture that for a period of thirty-six years the Society has achieved its greatest success, unequalled, both in the practice and the science of horticulture, in any corresponding period in the country's history. The ten gentlemen constituting the building committee have all gone to their reward, save one—for many years a most notable, public-spirited benefactor to horticultural and arboreal progress.

The most prominent event of the past year is the vote which authorized the sale of this hall and the removal to the new building now being erected by the Society and expected to be in readiness for occupancy on May 1st. Many will leave this hall with feelings of deep regret, for it is here very many interesting exhibitions and meetings have taken place, where very many new fruits, flowers, and vegetables have been introduced, for the first time, to the public, and their merits have received approval, and where our associations have continued instructive and pleasant.

Heretofore, each removal of the Society has added renewed lustre to the growth of horticulture in its earlier progress. When in the new building, may we hope to show by practical demonstration that the best horticulture of the world is none too good for us, and may we keep abreast of the times with the best work pertaining to our interests. When removed to the new building let us profit by the example of the men of noble deed who have preceded us, and let the progress of the future be in a corresponding ratio with the past. It must be our study to know what course to pursue to best promote its influence. There must be united and harmonious action among us or we cannot maintain the standing which we have so long enjoyed and which has built this Society up to its present position—one of the best on this continent—and though its members by their noble deeds have continued its progress from the beginning by devoted industry, and by courageous and persistent efforts and by liberal bequests have brought the state and country from comparative ignorance to enjoy the higher arts of horticulture.

I cannot speak fittingly of all the changes or advances made by the influences of the Society, and the intelligent energy which many cultivators have devoted to the introduction of new fruits both native and foreign. There was a period when the exhibition

tables were covered with hundreds of sorts of pears, which ultimately proved a costly experience to the enthusiasm of some growers, but a valuable object lesson to the society and to those growing pears for the profit. We have had the same experience with the apples, the peaches, the plums, the grapes, as well as the smaller fruits.

But now the prize lists, revised yearly, contain all found worthy of encouragement or cultivation, and adapted to the climate. Truly as much interest has been manifested in the introduction and cultivation of flowering plants; all that promise well receive a trial, and our plant houses and grounds contain the best to be found the world over. Many new plants from seed are shown every season which often receive the Society's gold and silver medals.

And the improvement in vegetables perhaps has enlisted as growing interest as either fruits or flowers. Very many new and approved sorts are yearly exhibited, each seemingly an improvement of its respective kind, and the question may fairly arise, is the end ever to be reached as long as nature can be assisted with the intelligence of man, and the great forces of nature become better understood? It would seem that a natural law exists whereby each kind of fruit or flower is endowed with a natural period of life, prolonged by care and cultivation, or shortened by the want of it.

Horticulture as a vocation and business is improving our lands to a wonderful extent, increasing the crops grown upon them; it is beautifying homes and landscapes; it embellishes homes with beautiful trees and flowers which are always a delight, not only to the family but to the passer-by. A beautiful home refines its inmates, gives better rational life and more of it, and is the very cornerstone that higher life and civilization rests upon.

Arboriculture or Forestry is also one of the branches in which we are interested. The finer deciduous and coniferous trees, both indigenous and exotic, are constantly being introduced and planted for the embellishment of homes and estates.

The requisite knowledge we have obtained of tree planting is giving great advantage in selection of kinds best adapted to the soil and climate, and while forest planting has not enlisted much attention in this Commonwealth, either by individuals or by cor-

porations, still it would seem that state and towns should issue bonds for the purchase of abandoned or cheap lands unsuitable for other husbandry, when forest industry could change thousands of acres situated in this Commonwealth from waste to productive forests—lands with a profit accruing to the state, contributing both a better climate and a lumber supply which is growing scarcer and dearer as time goes on.

Now ladies and gentlemen, members of the Society, I have time to speak of but few of the interests pertaining to the Society, but with the large membership, with the large wealth, with the early prospect of a new building, with enlarged accommodations for the library, commodious halls for exhibitions and lectures, with all the modern conveniences which ingenuity can devise, very much will be expected. Need I say that the most important steps to be taken are those that will promote peace and harmony? These are fundamental to our future usefulness; there must be united and harmonious action for our progress, or we make the retrograde movement so disastrous to our prosperity and welfare.

Let us begin the new century and the new year with the firm resolve that the spirit of union and concord shall ever remain the prominent light to which our course shall ever be directed.

It will require a full allowance of aptitude and common sense to meet fairly the exigency of removal, in adapting ourselves to the new building; undoubtedly there may be some conditions other than have been expected.

It will be a year of new experiences requiring considerable adaptability in the management of all departments to work smoothly and without friction. May we hope that each department will, as far as possible, correctly outline the course of procedure to ensure success.

But whatever may be our action let the love of our Society preponderate and be carried forward with that perseverance and zeal which actuated the earlier members who preceded us, and builded it to its present standing among the Horticultural Societies of the world.

I have thus endeavored, ladies and gentlemen, briefly to speak to you in my plain way, let me hope not entirely inconsistent with the time and spirit of the occasion; and for the honor of your presence I thank you.

Benjamin P. Ware, Chairman of the Committee appointed on the first of December to prepare a memorial of William Saunders, presented the following:

William Saunders, of Washington, D. C., since January 9, 1875, a Corresponding Member of this Society, passed on to his spiritual life on the 11th of September last. He was born at St. Andrews, Fifeshire, Scotland, December 7, 1822. His career has been most remarkable as a leader and organizer in his chosen calling of gardening. For three generations his ancestors had been distinguished gardeners in Scotland. He began as an apprentice, at sixteen years of age, under the instructions of the most noted horticulturists there. In 1845 he came to New York, and was first employed by Johns Hopkins, the founder of the University bearing his name, in laying out his estate of four hundred acres, called Clifton Park.

In 1854 he united with Thomas Meehan, at Germantown, Penn., as landscape artist and garden architect, and he designed Hunting and Fairmount Parks in Philadelphia. At this time Mr. Saunders was one of the principal writers on horticultural subjects, as many of us well remember. In 1862, when the Department of Agriculture was established, his ability was recognized, and he was appointed Horticulturist and Superintendent of Gardens and Grounds, which position he held to the time of his death, and it is admitted that the Department has not nearly exhausted the valuable suggestions which he made years before it began the work of park embellishment.

As President of the Park Commissioners of Washington he gave of his rich knowledge and experience the designs for planting that have been continued from year to year under his personal care, until the grounds about the capitol have the grandeur of a natural forest and yet show the skill of an artist in the selection and arrangement of tree planting that commands the admiration of the thousands of yearly visitors.

Mr. Saunders designed the beautiful cemeteries at Amboy and Rahway, N. J., Bethlehem, Penn., Chicago and Springfield, Ill., and also the magnificent National Soldiers' Cemetery at Gettysburgh. He was selected by Gen. Grant to design the Park surrounding the Lincoln monument at Springfield, Ill. Through his

influence thousands of plants have been introduced into this country for experimental purposes, and probably the most important and valuable fruit ever brought from any other country was the Navel or Seedless orange, which he imported from Brazil in 1870, and by propagating liberally was enabled in 1873 to give a few plants to a settler in Southern California. The original imported tree is now in the greenhouse of the Department. Today there are thousands of acres devoted to the culture of this, the best orange for the markets all over this country.

William Saunders was the first man who suggested to the farmers of the United States the value and importance of organizing for their mutual advancement, educationally, socially, and financially; hence came the organization of the Patrons of Husbandry. He was elected the first Master of the National Grange; he wrote the preamble of its constitution, which has never been altered, and by it thousands of farmers' families have been benefitted as in no other way possible.

In consideration of this memorial

Resolved, That the Massachusetts Horticultural Society fully appreciates the great value of the life work of William Saunders to the horticultural and agricultural interests of the whole country. And especially do we mourn his loss to this Society as a beloved and highly esteemed member.

Resolved, That this memorial be printed in our Transactions, and that a copy be sent to his bereaved family.

Benjamin P. Ware,
Aaron Low,
J. Woodward Manning,
Committee.

The memorial was unanimously adopted.

Augustus P. Loring, Esq., from the Committee on the Revision of the Constitution and By-Laws, presented the report of that Committee in print, and explained the new By-Laws proposed. It was moved and seconded that the report be accepted and this motion was carried.

It was moved and seconded that when the vote on the adoption of the proposed code of By-Laws is taken, it be taken by ballot, with the use of the check list, and this motion was carried.

It was voted to take up the report of the Committee section by section, beginning with the "Preliminary" portion.

A motion that speakers be limited to five minutes each was defeated.

A motion that the subject be indefinitely postponed was defeated by a vote of 31 in favor to 59 against.

A motion that it be postponed until the first Saturday in October was carried by a vote of 43 in favor to 40 against.

The appropriations recommended by the Executive Committee at the meetings of the Society on the 3d of November and the 1st of December, 1900, came up today for final action, as follows:—

For Prizes and Gratuities for the year 1901,

For Plants	$2,000.00
" Flowers	2,500.00
" Fruits	1,700.00
" Vegetables	1,200.00
" Gardens	500.00
" Native Plants	175.00
Total	$8,075.00

For the Committee on School Gardens and Children's Herbariums, for Prizes	$125.00
For the same Committee for Incidental Expenses	75.00

At the meeting of the Executive Committee on the 29th of December it was voted to recommend to the Society to make the following appropriations:

For the Library Committee, this sum to include the income of the French and Farlow Funds	$700.00
For the Committee of Arrangements, this sum to include all extraordinary expenses of said Committee	300.00
For the Committee on Forestry and Roadside Improvement	150.00

For the salaries of the Treasurer and Superintendent of the Building, and the Secretary and Librarian $3,000.00

For the Committee on Lectures and Publication, this sum to include the income of $50 from the John Lewis Russell Fund 250.00

(The last appropriation was recommended by the Executive Committee on the 29th of November.)

The report was accepted and the appropriations were voted.

The President also reported the appointment by the Executive Committee of Charles E. Richardson as Treasurer and Superintendent of the Building, and Robert Manning as Secretary and Librarian for the year 1901.

On motion of William J. Stewart it was voted that the thanks of the Society be presented to Messrs. Kelway & Son of Langport, England, for their generous gift of medals as prizes for pæonies during the present and the last three years.

Letters were read from Ex-President Francis H. Appleton, and Arthur F. Estabrook, each presenting, for use in the new building, one of a pair of large and elegant vases loaned for the last chrysanthemum show by the Jones, McDuffie & Stratton Company. The thanks of the Society were unanimously voted to the givers for these adornments of our exhibition halls.

The Secretary read a letter from Charles S. Sargent to Ex-President Appleton conveying the offer by Mrs. J. Montgomery Sears of the sum of $350 to be used for a first and second prize for Seedling Carnations. The thanks of the Society were unanimously voted for this liberal gift.

A letter from William A. Taylor, Secretary of the American Pomological Society, in relation to the biennial session of that Society the present year, was read and referred to the Executive Committee.

The Annual Report of the Committee on Lectures and Publication and the Annual Report of the Secretary and Librarian were presented and referred to the Committee on Publication.

Adjourned to Saturday, February 2.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 12, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

EVERGREENS FOR WINTER EFFECT.

By J. WOODWARD MANNING, Reading.

In considering a list of hardy evergreen trees and shrubs, useful for winter landscape effect, the intention is to include besides conifers those classes of broader-leaved evergreens of tree, shrub, and vine habit which are as yet seldom associated with conifers for this purpose. These include such kinds as Hollies, Rhododendrons, Azaleas, Laurels, Ivies, etc., some of which combine with their evergreen foliage a wealth of flower effect as well, rendering them useful in landscapes at all times of the year, and the intention is to bring together here a rather complete list of these plants and show how it is thus possible to extend their use and produce beautiful foliage effects throughout the winter months.

First considering the larger growing conifers, we have besides the White Pine (*Pinus Strobus*), so well known to us as our most valuable as well as most ornamental native, a selection of foreign Pines which have much of the same general effect of growth and similar foliage as *P. Strobus*, among which are the Japanese species, *P. Thunbergii*, varying in effect from the last in a somewhat more open habit and darker foliage; *P. parviflora*, of dwarfer habit, with shorter foliage in smaller tufts, and with bark of a greyish tone of color; *P. densiflora*, another Japanese species with soft dark green foliage and flaky reddish bark; the Himalayan species, *P. excelsa*, the most beautiful of the class, with densely clothed branches of a distinct pendulous habit and very long, somewhat drooping, pale glaucous green leaves in large showy tufts; the American *P. Lambertiana*, similar to the White Pine but with more densely clothed branches and a more

strictly conical habit; *P. Cembra*, from the Alps of Europe, with rich green, densely tufted foliage and a very close, rounded, ovate habit; and *P. Bungeana*, a North China species of rounded habit of growth and thinly branched with densely tufted foliage and remarkably light colored bark, milky white in effect. All of these are hardy and useful for variety.

Taking another type represented by *P. resinosa*, our native Norway or Red Pine, we have a similar though distinct effect of heavy growth and long, dark green, densely-tufted foliage in the Austrian Pine (*P. Laricio* var. *Austriaca*) and its typical form known as the Corsican Pine (*P. Laricio*), the Japanese *P. Koraiensis*, a species of smaller growth, and the West American *P. ponderosa*, which, while a most important tree in the central and far western states, does not succeed as satisfactorily in our vicinity. It is a dense growing tree with dense tufts of long, dark green foliage. All the species mentioned under this type are of comparatively rapid growth and in their younger stages, when the lower branches are retained, form most useful specimen lawn trees.

We are prone to neglect our native Pitch Pine (*P. rigida*) which, while somewhat difficult to transplant, when once well established forms a tree capable of withstanding our most exposed seashore and inland conditions and will adapt itself to poor soils. It is, too, more apt to take on picturesque forms than any other native, often giving that peculiar, irregularly round-topped, bare-trunked effect that is so commonly associated with Italian views in which the European Rock Pine (*P. Pinea*) forms a more or less salient point. Other species of larger-growing Pines adapted to our climate and similar in effect to the Pitch Pine are the *P. contorta* of the West, the *P. tydæa* of southern New England, and *P. pungens* or the Table Mountain Pine of the mountains of North Carolina. The Scotch Pine (*P. sylvestris*) is a well known and highly useful form for dry, sterile soils, but is not as long-lived or as generally satisfactory as some other species, though very generally used in landscape planting.

In Pines of dwarfer stature than those mentioned, the Mountain Pine (*P. montana* or *Mughus*) figures as a useful lawn tree of rounded, compact habit of growth, very useful for planting in

Picea alba var. cœrulea.

sterile soils under all conditions of exposure. To attain further dwarfed effects in Pine growth we have recourse to the dwarf forms of *P. Strobus*, *P. sylvestris*, and *P. Massoniana*, the latter also producing two remarkable golden leaved varieties known as the Golden and the Sun Ray Japanese Pines.

Of Spruces, a plea should be entered here for our native species as in many respects best adapted for general New England conditions, and yet these have been largely overlooked, and the foreign varieties planted where the natives would have done better. The Red Spruce is an instance to the point, in which we have a moderately quick growing tree with light green foliage, reddish stems, and a ruggedness of character that ensures its successful use in seashore and other exposed situations, and our White Spruce, (*Picea alba*) is in many respects our most ornamental evergreen, combining, as it does, absolute hardihood with elegant form and a tendency to retain its lower branches better than any other evergreen, while it shows wide variation in the color of its foliage, in some instances its glaucous types proving rivals to the best form of *P. pungens* (the Rocky Mountain Blue Spruce.) While it is not as rapid in growth as the Norway Spruce (*P. excelsa*) it does possess the merit of longevity and none of the early deterioration that the latter does. The Rocky Mountain Blue Spruce has become well known and is a most useful lawn tree, though after twenty or thirty years it begins to lose that symmetry in form that at first recommends it for lawn planting. It is a mistake to expect any evergreen to show at maturity the symmetry that is usual in its juvenile stages. Many assume a distinct ornamental habit with age but are liable to demand much room for their development, and if this maturity is desired, room for such development must be allowed, thus requiring grounds of broad extent. Other spruces of high ornamental merit and American origin are the Menzies Spruce from Colorado, *P. sitchensis* or *Menziesii*, a dense growing, short leaved species from the Northwest; *P. nigra*, the Black Spruce, which is one of our most abundant northern species, comprising the major source of lumber supply for the East and well adapted for seashore planting, and *P. Engelmannii* from the Rocky Mountains, nearly like the Rocky Mountain Blue Spruce but with less rigid foliage, a tree bound to be of great value in future plant-

ing. From Japan, *P. polita*, the Tiger-tail Spruce, is a most distinct species, with very long, rigid, spiny foliage, thickly set around the branches, and with a distinct habit combining rapid, pyramidal growth with a semi-pendulous tendency of the branchlets. *P. ajanensis* and *P. Alcockiana* are similar in effect, of dense, small branched habit in youth, with short foliage thickly set on the branches; but the latter species is particularly noteworthy in the distinct silvery cast of the under surface of the foliage, and the former species in the brilliant crimson color of its young cones. Both have a distinct upward tendency of the branches and make beautiful lawn trees. The rare and beautiful *Picea Smithiana*, from Asia, is distinct in habit from any other species; the foliage is of a silvery green and the habit is decidedly pendulous in all stages. A native of the temperate regions of the Himalayas, it is one of our most remarkable hardy ornamental trees and can be grown successfully in warm, somewhat sheltered situations. To Europe we are indebted for the Norway Spruce (*P. excelsa*), the Oriental Spruce (*P. orientalis*), and the rare *P. Omorika*. The first has been planted more than any other species and for easy culture, rapid growth and hardihood has no rival. Unfortunately it will not stand smoky atmospheres, or dry situations, and under such circumstances is short lived and becomes more or less unsightly. However, some of our finest winter effects at present depend largely on this species, and probably for many years this will have a wide popularity. This species, too, is more prolific in varieties than any other, and the Golden-tipped, Finedon Hall variety, the pendulous *P. e. pendula*, the weeping *P. e. inverta*, the long branched, grotesque form known as *P. e. monstrosa*, the open habited *P. e. alata*, and the angular branched *P. e. eremita*, are noteworthy among the larger growing varieties, while in dwarfer forms such as *P. e. Ellwangeriana*, *P. e. dumosa*, *P. e. Clanbrasiliana*, *P. e. Gregoryana*, *P. e. pumila*, and *P. e. pygmæa*, the habit becomes dwarfed until the last mentioned varieties form but carpets of dense, thickly tufted foliage. A collection of varieties of the Norway Spruce alone would go far toward producing a varied and evergreen winter effect on any private grounds.

P. obovata is a species rather closely associated with the Norway

Tsuga Canadensis var. nana.

Tsuga Sieboldii.

Spruce, having a more slender growth and pendulous habit. *P. orientalis* is a most beautiful species, of densest habit, with very dark, thickly set foliage and slender branched growth, and a most useful lawn tree, somewhat slow in assuming a leader but eventually proving hardy in all but abnormally unfavorable conditions. *P. Omorika* on the other hand, while hardy, is seldom seen in New England and is confined to small, isolated areas in its native Servian habitat. Of slow growth when young, it is most interesting at present from its rarity.

Of Hemlocks the variety is greater than is ordinarily understood, for while the *Tsuga Canadensis* is a native of highest ornamental value, the Carolina Hemlock, (*T. Caroliniana*) is very distinct in habit, less dense in growth, and with broader, longer foliage. The Japanese *T. Sieboldii* in its youthful stage is a very upright species with short, dark green, thickly set foliage, while *T. diversifolia*, also Japanese, has even shorter, darker foliage, reddish bark, and a more slender habit. Western America produces two other species in *T. Mertensiana*, of very dense, upright habit, and *T. Albertiana*, similar in many respects to our native species but of more rapid growth. These two species form extensive forests in Oregon and Alaska and constitute a valuable timber supply. While all the species of Hemlocks are distinct, yet our native species will always be of greatest value for ornamental planting, combining hardihood, beautiful foliage, and graceful habit with ease of transplanting; this species is also rather prolific in varieties, of which the Sargent's Weeping Hemlock (*T. C.* var. *Sargenti pendula*) is a graceful tree of drooping habit. *T. Canadensis* var. *parvifolia*, of dense upright habit with dark green foliage; *T. C.* var. *alba spica*, oddly variegated with silvery spots; and *T. C.* var. *globosa*, of dense rounded growth, are examples.

The Douglas Fir (*Abietia Douglasii*) is one of our finest American species and forms the connecting link between the Spruces and Hemlocks. A native of the western states, where it forms immense forests of most valuable lumber, it takes kindly to our eastern soil and is a most ornamental species, preserving its lower branches to extreme age. The habit varies from a dense, broadly pyramidal tree with soft green foliage

to pendulous forms and silvery casts of color. It will hold its own in public appreciation as one of the most desirable of ornamental lawn trees.

In the Firs we have less diversity in habit than in other large conifers, but a number of species are hardy in our climate and can be recommended. For general planting the Silver Fir (*Abies concolor*), the Veitch's Fir (*A. Veitchii*) and Nordmann's Fir (*A. Nordmanniana*) will undoubtedly hold best in popular consideration and prove most valuable. Of our native species *A. balsamea* is rather short lived and seems to resent isolated planting. *A. Fraseri*, from the Southern Alleghanies, seems more permanent as a lawn tree and its distinction is that of denser growth and more thickly set foliage. A dwarf variety of our native Balsam Fir, (*A. b.*, var. *Hudsonica*) becomes a thickly branched evergreen shrub rarely exceeding a yard in height. Western America is very prolific in species of Firs of which the Silver Fir (*A. concolor*) aforementioned is truly a prince of trees, being of rapid growth with beautiful, long, thickly set foliage, varying from soft green to most showy silvery casts, and combining as well considerable variegation in general habit effect. No tree excites greater admiration than a good specimen of the Concolor Fir.

Other western species are *A. grandis*, less robust than others; *A. magnifica*, of columnar habit with a peculiar perpendicular arrangement of the foliage on the branchlets; *A. nobilis*, of dense heavy growth with beautiful foliage varying in color from dark green to silvery blue; and *A. lasiocarpa*, closely allied but inferior to the *concolor*. These last named are all less hardy than the *concolor*. From Japan, besides that beautiful Veitch's Fir (*A. Veitchii*) of rapid growth with rich, glossy green foliage comes the *A. homolepis* or *brachyphylla*, similar in general effect and equally beautiful though rare; but *A. firma* is distinct in its flat, whorled, more conical habit and peculiarly notched, dark green foliage.

From Southwest Europe we obtain the Nordmann's Fir with its rich, glossy, thick set foliage and beautifully symmetrical habit; but the range of species includes also the Cephalonian and Cilician Firs (*A. Cephalonica* and *A. Cilicica*) of broad habit, with sharp dense foliage and a peculiar upright tendency of the branches, and

Abietia Douglasii.

Juniperus Chinensis var. alba spica.

the Pinsapo Fir (*A. Pinsapo*) from the Sierras of Spain, of upright, densely branched growth with leaves of needle-like sharpness. The Common English Silver Fir (*A. pectinata*) seems similar to the American Silver Fir in its lack of adaptability to isolated planting; yet its weeping variety (*A. p. pendula*) thrives under proper conditions and is noteworthy for its grotesque ornamental effect.

The trees which have been mentioned are, with the exception of the dwarf varieties, of large size, requiring ample lawn space for full development, but as we pass to the Junipers and Cedars, Yews and Arbor Vitæs, we find trees of dwarfer stature or more columnar habit, that can be used to advantage on more restricted lawns.

Junipers, while comprising no very large growing trees, do combine great variation in habit with coloring of foliage, and are most valuable for grouping. Our ordinary Red Cedar, *Juniperus Virginiana*, is not as fully appreciated as it should be. In habit the tree varies from straight columnar to broadly pyramidal and weeping types, and the foliage ranges from deepest green to silvery and golden tones. The types recognized in nurseries at present include *J. V. pendula*, of drooping habit; *J. V. Schotti*, of upright columnar growth with light pea-green foliage; *J. V. tripartita*, with crested, densely branched habit; *J. V. alba spica*, a silver variegated form; and *J. V. glauca* or *elegans*, with distinct silvery hue. The Chinese Junipers are of dense columnar growth with glaucous foliage, showing in their varieties peculiar silvery blotch-like variegations (*J. Chinensis alba variegata*); or they are richly tinged with golden yellow as in *J. C. aurea*. A choice Japanese species, *J. Japonica*, is very distinct from the last in its fine, soft foliage, of deepest green in the type, with silver and gold variegations (*J. J.* var. *fœmina variegata* and *J. J. aurea variegata*). *J. excelsa* of Europe and Asia forms a medium sized tree of upright, conical habit with foliage somewhat similar to the American Juniper. *J. recurva*, of the sub-arctic Himalayas, is striking in its pendulous tendency and the foliage has a peculiar reddish tone, while the bark is conspicuously red. *J. drupacea* of southern Europe succeeds under favorable soil conditions and is distinct in its sharp, light green foliage set at right angles to the branchlets

and also in its abnormally large fruits. While those mentioned are generally of tree-like growth, the dwarf and prostrate forms are useful for grouping and covering effects. Our well known creeping or Savin Juniper (*J. procumbens*) is being extensively planted and the variety *aurea* with bright golden summer foliage is of value for contrast. *J. Sabina* is equally useful for low planting and its natural habit of densely covering the ground with its matlike branches is a suggestion of nature that is being copied by the landscape gardener. This too has distinct varieties in *J. S. tamariscifolia*, with darker foliage and broadly spreading, shrubby growth; the silvery variegated form (*J. S. variegata*), and a form known among nurserymen as the Waukegan Juniper, in which the foliage is of a rich bronzy green and the plant grows to a broad cup-like shape. Another distinct class of Junipers is represented by the Irish Juniper (*J. communis*, var. *Hibernica*) which forms a small columnar tree of light, soft green foliage effect, but the Swedish Juniper, another variety, is considerably hardier than the Irish.

Arbor Vitæs, locally known as Red Cedar, (*Thuya occidentalis*) have proved of great value in their use for screens and hedges, but are not as frequently grouped for their individual beauty as they should be. A specimen plant clothed completely to the ground is a really beautiful object. No conifer has proved more prolific in varieties, and the range in color and habit is remarkable, varying from darkest shades of green to silver and golden forms, and from strict columnar habit to weeping, globular, and prostrate growths. Of these the most valuable would include *T. o. ericoides*, *T. o. lutea*, *T. o.* George Peabody, *T. o. pendula*, *T. o. plicata*, *T. o. Spathæ*, *T. o. Vervœneana*, *T. o. Wareana* (*Sibirica.*)

Other species of Thuya include the Oriental Arbor Vitæ (*T. orientalis*) with lighter, more columnar habit than our common Arbor Vitæ and with golden and other varieties. Then our western species, *T. dolabrata*, is hardy under proper soil conditions and is very distinct in its foliage and general effect. This, too, has a distinct form in the silver leaved *T. d.* var. *variegata*. *T. Japonica*, of graceful habit, and *T. gigantea*, of columnar, massive growth, are not as generally hardy as the previously mentioned species.

Juniperus Sabina var. procumbens.

Thuya occidentalis var. aurea.

The Cypresses are another valuable class, comprising many varieties not adapted to our soils and climatic conditions, the Lawson's Cypress (*Cupressus Lawsoniana*) being an example of which the type and the variety *erectis viridis* alone can be grown here, and then only under special conditions. The Nootka Sound Arbor Vitæ (*C. Nootkatensis*) is somewhat hardier. On the other hand, most of the Japanese Cypresses known as Retinosporas succeed well in all but intensely sunny, wind-swept locations. Of these there is a great range in form and color of foliage and habit of growth. *Cupressus obtusa* forms a small, loose, pyramidal tree, from fifteen to twenty feet high, with rich, glossy green foliage. The variety *nana* has curiously crested foliage and a dense habit, varying in color from deepest green to golden tinges in its sub-varieties. *C. o. lycopodioides*, with rich, metallic-green foliage resembling club-moss; *C. o. filicoides*, with beautiful, fern-like foliage, and *C. o. pendula* are other distinct forms. *C. pisifera* is also productive of many varieties, varying in form from symmetrical, well branched pyramidal trees to dwarf, globular shrubs, and in color from greens through silver and gold tones. The other best varieties include *C. p. aurea*; *C. p. gracilis*; *C. p. plumosa*; *C. p. p. aurea*; *C. p. squarrosa*, etc.

Our native White Cedar is a true Cypress (*Cupressus thyoides*) and is beginning to be recognized as of some ornamental value. It will thrive on much dryer soils than its usual habitat would lead one to suppose.

The Chinese Cypress (*Cryptomeria Japonica*) is not sufficiently hardy to admit of general cultivation. Where it succeeds, however, it makes a narrowly conical tree, with reddish bark and drooping branchlets covered with short, pea-green foliage.

Of the true Cedars, the Mount Atlas Cedar (*Cedrus Atlantica*) and its silvery variety, *glauca*, are occasionally seen in sheltered locations but can hardly be recommended for general purposes.

The Yew family comprises a number of ornamental forms and the demarkation between tender and hardy sorts varies according to the nature of the soils and exposures in question:

None of the Cephalotaxi can be relied upon, though *Cephalotaxus Japonica fastigiata* is the most rugged. The English Yew (*Taxus baccata*) in shaded, sheltered locations forms a broad,

shrub-like tree, with dark foliage, and the golden leaved form known as *T. b.* var. *Washingtonii* is quite satisfactorily hardy; the pyramidal Irish Yew, *T. b. Hibernica*, when used in shady locations frequently proves hardy, and additional forms that prove satisfactory are *adpressa*, *ericoides*, and *glauca*. The American Ground Yew or Ground Hemlock forms dense carpets in shady woods and in open, sunny situations becomes more bush-like in effect. The foliage is of a rich, pleasing green. From Japan the *T. cuspidata* is received in two forms, one with dense, broad habit and short, stiff foliage; the other of more loose and open habit and longer, softer foliage. Both are very hardy.

Japan has provided us with another beautiful evergreen lawn tree, the Umbrella Pine (*Sciadopitys verticillata*) which is perfectly hardy, forming a narrow, pyramidal tree with darkest green foliage, arranged in curious whorls on the branches. Yew-like in its depth of color and foliage effect, yet distinct in affinity, this tree stands alone in its individuality and beauty. It has a variety with golden, variegated foliage, known as the Golden Leaved Umbrella Pine.

We have now considered those varieties of coniferous evergreens of known hardihood, noting their wide range in habit of growth and hue of foliage, and are able to conceive of the many and varied landscape effects for which they may be used, more especially in overcoming the usual monotony of the winter landscape.

We are now prepared to look into the question of the possibility of variety in broad leaved evergreens, and here Rhododendrons with their magnificent floral effects so varied in color in the Hybrid varieties, ranging from purest white to deepest crimson and shades of purple, with rare instances of yellow shades, naturally assume the highest importance. By a critical selection of varieties perfect hardihood can be assured, though their demands of cool, shady situations with abundant moisture must not be lost sight of, but while *Rhododendron Catawbiense* has been given full credit for its value, some other species have been neglected and are seldom planted, though *R. maximum*, a rare native, but abundant in some sections, is becoming an important plant of late for producing immediate effects by the transplanting of well developed plants from their native thickets. *R. punctatum* has a

Leucothoë Catesbæi.

smaller foliage than either *R. Catawbiense* or *R. maximum* but is useful in combination with both, while *R. Wilsonianum*, *R. hirsutum* and *R. ferrugineum* form still dwarfer growths and are useful for edging groups or in rockery plantings. Our native Mountain Laurel (*Kalmia latifolia*) has been slow in forcing itself into public and extended use, but newer methods of supply have brought about a revolution in its use and we can now enjoy its unique and unsurpassed flowers at less expense than in former years. The other native species, *K. glauca* and *K. angustifolia*, are useful, though they never will come into as general use as the ordinary mountain laurel. Of Azaleas as generally known under that name, we have but one hardy evergreen representative, *A. amœna*, with its small, glossy-green foliage and showy crimson or purple flowers.

In Andromedas or the Lily of the Valley trees we have no finer species than *A. floribunda*, which gives an effect of flower throughout the winter, though actually this effect is produced by the buds which form the fall previous and remain ready to open with the first warm weather of spring. *A. Japonica* is a second species of high merit and capable of rich effects with proper use. *A. calyculata* and *A. eatifolia* are other evergreen species of value.

There is a class of broad leaved evergreens that are noteworthy more for their foliage than for their flowers, and under this head we must include the Box plants which vary in the stature of the varieties from the Dwarf Box, used in old-fashioned gardens for edgings, to small tree effects produced in larger growing varieties, of which specimens are to be found in this vicinity some ten feet high. *Laurus schipkœnsis* is hardy and can be used to a limited extent in the same manner as Laurel is used in English gardens. Unfortunately, however, cost will prevent its extended use. The Holly-leaved Barberry (*Berberis ilicifolia*) and *Mahonia aquifolia* or Ash-berry are types of a family of evergreens varying in hardihood, those mentioned, however, being perfectly hardy forms. The Fire-thorn (*Cratœgus pyracantha*) is a useful evergreen either as a hedge plant or for groups with other shrubs. While frequent complaint is heard that the English Holly lacks hardihood, we must not lose sight of the fact that we have here our native American Holly, a close peer of even more rapid growth

and with fine broad foliage, brilliantly lightened up and enlivened in effect by its bright scarlet winter berries. Another native evergreen shrub that is much neglected is our Ink Berry, *Ilex glabra*, a plant with oval, shining green foliage and black berries, which forms a dense shrub attaining a mature height of four feet. Closely allied to this is a Japanese species, *I. crenata*, recently introduced and much sought for already. We also obtain a semi-evergreen effect from the California Privet.

Among vines we have the semi-evergreen effect of the Hall's Honeysuckle and *Akebia quinata;* the true evergreen effect of the English Ivy, which in shaded locations is occasionally seen to perfection even in this vicinity.

Broad-leaved evergreens of low growth include the Scotch Heathers, perfectly hardy subjects forming a mat on the surface of the ground and giving an abundance of bloom in shades of white, red, and purple, and some of the English Heaths such as *Erica tetralix*, *E. carnea* and its varieties, are hardy, while closely allied evergreens include *Cassiope hypnoides*, *Vaccinium Vitis-Idœa*, *Daphne Cneorum*, *Empetrum nigrum*, and *Ledum latifolium*, and European plant lovers are eager seekers for our Mayflower (*Epigœa repens*), Checkerberry (*Gaultheria procumbens*), Partridge Berry (*Mitchella repens*), and *Linnœa borealis*. The *Leiophyllum buxifolium* or Sand Myrtle is a useful plant for rockwork, and for such uses we may add the following: The Hardy Candytuft (*Iberis corifolia*, *I. semperrirens* and other varieties), the Creeping Thyme (*Thymus vulgaris*), some of the Speedwells (*Veronica incana*, etc.), *Heuchera sanguinea* with its broad, deeply indented, light colored foliage and bright crimson flowers, *Galax aphylla*, now so frequently used by the florist, in its bright glossy green or bronze red, round, toothed foliage; the Achilleas in their varied foliage and flowers as shown in *A. Ægyptiaca* with silvery foliage and lemon yellow flowers and *A. tomentosum* with matted, moss-like, soft green foliage, and golden yellow flowers; *Alyssum serpyllifolium* with silvery foliage and *A. saxatile* with broader foliage and both with golden flowers in spring. The Armerias or Thrifts give odd, pin-cushion-like effects, and vary in flower from white to crimson, and the Helianthemums or Rock Roses are a most charming class, with broadly spreading, thickly

matted foliage and flowers varying from white through yellows to crimsons. The Saxifrages are also distinct in their broad, rounded foliage, of a thick, leathery texture, taking on shades of crimson and purple, in addition to the summer greens, and *Sedum Sieboldii* is evergreen in its effect and charmingly graceful in its habit, while the Houseleeks or Sempervivums with their rosettes of spiny, pointed leaves, thickly clustered among the crevices of the rocks are quite unique and form a stepping stone toward the use of hardy Cacti of which we have perhaps a dozen species of more or less hardihood, among which *Opuntia vulgaris*, *O. Missouriensis* and *O. Rafinesquiana* are well known and to be depended upon. Of trailing and climbing plants that have not been noted, we can add the Bearberry (*Arctostaphylos Uva-ursi*), the rare and somewhat difficult *Lithospermum prostratum* with its rich blue flowers, the Periwinkle (*Vinca minor*) with its rich glossy green foliage and blue flowers, and even the Cranberry is a useful plant, particularly in moist spots.

There is still another class of plants of which no mention has been made—the hardy Bamboos, of which a list of some dozen varieties could be mentioned which are perfectly hardy, and of which the best and most distinct perhaps are *Bambusa erecta*, *B. Veitchii*, *Arundinaria Metake* and *A. nana*. In these there exists a confusion of names at present which requires close acquaintance to remedy. Their hardihood has only been proved of late, but a colony can be seen at the Arnold Arboretum which will show their variety at least.

This list is not a complete one, but I believe will serve to show that we have a great range of evergreen material to work with, and that there are possibilities for extending the interest in our gardens far beyond the flowering period of plants, and rendering such gardens attractive at least up to that period when snow deeply covers the ground.

The lecture was illustrated by stereopticon pictures of the trees described, some of which are reproduced here.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, January 19, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE TREES OF OUR NEIGHBORHOOD.

By MISS EMMA G. CUMMINGS, Brookline.

As I have long been interested in the study of trees, I determined a few years ago to make a more intimate acquaintance with them, especially with the trees growing in this vicinity.

With an enthusiastic companion many pleasant hours have been passed walking along the roads or wandering through the woodlands, and these walks have been filled with interesting and amusing incidents.

Once we lost our way in the woods back of the Brookline Country Club, and wandered about for hours, when, hearing the sound of music, we turned in that direction and before long found ourselves in sight of the open ground of the Country Club. But to our dismay the place was guarded by policemen and we dared not cross. At length a mounted officer approached us and we asked permission to cross the land, which at first he peremptorily refused. We explained our situation, and after many questions on his part, to satisfy himself that we were not trying to gain an unlawful entrance to the scene of the races, he offered to escort us across the grounds to the Clyde Street entrance, and this, just as a crowd of people were arriving for one of the May Meetings. By this means, however, we saw a Cut-Leaved Beech, the first that we had noticed in Brookline. We have seen several others since then, but none are so large and handsome as the famous Cut-Leaved or Fern-Leaved Beech in front of the Redwood Library at Newport, R. I. It is not a native tree, but a variety of the European Beech. Trees known as *cut-leaved* such as beeches and birches, also weeping varieties, and those with purple or copper-colored leaves are all propagated from individual trees, each known

as a *sport*. They are reproduced by cuttings, as the seedlings generally revert to the original form.

We have watched the trees in summer as well as in winter, when the study of the buds, and of their method of growth and branching is a fascinating one. Olive Thorne Miller says, "When the winds and frosts of Autumn have stripped the trees; and the leaves, which have formed the tender beauty of Spring and the glory of Summer lie prone in the dust, think not the beauty of the tree is departed. Then first it shows its undisguised *self*—its individuality."

In fact all seasons have a special interest. In winter alone, the leaf and flower buds peculiar to each species can be studied to advantage. With the spring comes the unfolding of these buds and flowers, the latter in some cases delayed into summer, when the trees in full foliage, and many already in fruit, are seen at their best. In autumn the leaves change color and fade, but in doing so the maples, oaks, and others take on a line of coloring each peculiar to itself, thus giving from season to season, and from summer to winter, a renewed interest in their appearance.

Our attention was first given to the native trees—that is, native or indigenous to the United States, and of these we found about one hundred. In consequence of our severe climate some of these trees are small, but in more favored localities they grow to a good size. Such are the Silver Bell and Fringe trees, hardly more than shrubs on our lawns, yet both are planted for their abundant showy white flowers. Such also are the Speckled Alder, and the small shrubby Magnolia, or Sweet Bay (*Magnolia glauca*) that grows in the swampy lands of Magnolia and Gloucester, but which in its southern home grows to be an evergreen tree of fifty to seventy-five feet in height. There the leaves remain on the branches with but little change of color, until the appearance of the new leaves in the spring, while in the northern states the leaves fall in early winter.

About forty-five kinds of trees are native in Brookline, the suburb or vicinity above alluded to. Some are growing in profusion, while others are represented by only a few specimens. To this number should be added a few not naturally wild in this region, but which have established themselves, and appear like

natives. They are Willows, Buckthorn, Locusts, Apples, and Cherries. They have not, however, strayed far into the woods, but are generally found near houses.

The large willow trees that we all remember to have seen growing by the side of streams or on low lands, are of European origin, probably brought over by the earliest settlers, and that includes both the upright and weeping willows. Of our native New England willows, but one assumes a tree form, the Black willow, and that is not common near Boston.

Locusts are not seen at their best here. They have suffered greatly from the ravages of the borer; otherwise they would be exceedingly valuable as timber trees. Of all our North American trees it is the one most commonly planted in central and northern Europe. I have scarcely ever seen anything so beautiful as the streets of a city in southern Spain in the month of April, when the locust and orange trees were in full bloom. Not until then did I appreciate the beauty of the locust tree.

We ought to feel satisfied with the variety of trees growing naturally in Brookline, when we learn that there are only between eighty and ninety species indigenous to New England, and a large proportion of these that are native in other parts of New England are planted in Brookline, including some of the Maples, Oaks, Mountain Ash, Butternut and Black Walnut. According to Professor Sargent's latest estimate there are in the Atlantic region three hundred and forty-three species, and in the Pacific region, including the Rocky Mountains, one hundred and sixty, besides seven common to both regions. This makes the total number in North America north of the Mexican border, five hundred and ten. New species are constantly turning up, especially of Hawthorns, so that it is possible that the number in the Atlantic regions will have to be still further increased.

Of the trees native to the Southern States we have growing in our midst, Magnolias, Locusts, Judas or Red-Bud, Virgilia, Liquid-ambar, Red Mulberry, and the Bald Cypress (*Taxodium distichum*). The latter, the most interesting and rarest of this group, is represented by a beautiful specimen near Gardner Road, on the Blake estate. It is easily identified by the passer-by, as it stands alone on open ground, and is a tall, symmetrical tree, conical in

shape. It belongs to the coniferous or evergreen group of trees, yet contrary to their custom, sheds its leaves in winter, as its name, *Bald*, or Deciduous Cypress indicates. At the South it covers vast areas of low land, and travelers who have seen it speak of its impressive height, with its branches covered with Tillandsia, the so-called Southern moss.

From the Western States we have the Kentucky Coffee tree, the American Crabapple (*Pyrus coronaria*), interesting for its beautiful fragrant flowers, and the fact that it comes into blossom ten or twelve days after all the other apples have shed their petals, yet it is less frequently planted than the Japanese varieties, the Ash-leaved maple, Osage-orange, which is used in the West and South quite extensively for hedges, and some of the Oaks. While from the North there are the Mountain Ash, Balm of Gilead, Balsam Fir, White Spruce, and Arbor Vitæ (*Thuya occidentalis*).* The Rocky Mountains furnish two trees, the Colorado Blue Spruce, and the Douglas Spruce or Fir, commercially one of the most valuable trees of the world. On the Pacific coast it grows to a height of two hundred feet and over; lumbermen say three hundred to three hundred and fifty feet. With the exception of the big trees (the Sequoias) of California, no tree equals it in massiveness of trunk or in productiveness of timber, and it is one of the most widely distributed trees of North America. I know of no large specimen in this neighborhood.

Beside these American trees we have drawn largely upon far distant parts of the world to beautify our lawns and roadways, and we can count as many, or more kinds of foreign trees growing in our midst as there are native ones. They come from Japan, China, Corea, the Himalaya Mountains, Persia, the Caucasus, Siberia, Northern Europe, and Southern Europe, bringing up the total number of species that we have seen in and about Brookline

*The Arbor Vitæ, used so much in New England for hedges, where it grows wild in wet soil, forms almost impenetrable thickets and is often called White Cedar. The local name of a tree is often very misleading. For instance, it is quite common to call any hard wood by the name of *iron* wood, and in the United States there are twelve different trees called ironwood; several kinds of trees are called cedars; six different pines are called Yellow Pine; and there are eight Balsams, and sixteen Junipers, each referring to different species, and often to different genera.

to two hundred and sixteen. Many of the exotics have been with us so long that there is no question about their adaptability to our climate, while others have not yet been proved to be thoroughly hardy.

Until about fifty years ago, the larger part of Brookline was covered with a growth of forest trees, and in some sections they still remain. Such is an area of about five hundred acres bounded by Heath, Hammond, Newton, and Clyde streets, where are still to be seen the finest specimens of Hemlocks and White Pines, and the only Black Ashes I know of in the town are here. A portion of this land bordering on Newton and Hammond streets has recently been reserved by the Park Commissioners. Would that they also had taken about fifty acres of land which is situated between Boylston street and the Boston & Albany railroad tracks, near the pumping station of the Boston Water Works at Chestnut Hill Reservoir. It is bounded on one side by Reservoir Lane, one of the most picturesque and rural roads still left to us and is accessible to everybody who wishes to visit it, being about five miles from the State House. It has proved to be one of our favorite haunts, for here grow thirty-five different species of native trees. Among them fine large old Chestnut trees, Black and Yellow Birches, five different Oaks, and four different Hickories, — the Shagbark (erroneously called Walnut), Mockernut, Pignut, and Bitternut. The Bitternut is the most beautiful and graceful of the four trees, yet its nuts are so bitter that even squirrels, except in dire extremity, will not eat them. The Pignut was formerly regarded as nearly worthless, but now a variety has been found with a thinner shell and without the bitter taste, which it is hoped under cultivation will produce nuts commercially as valuable as those of the Shagbark.

The region around Hammond's Pond, near the Newton line, has a special interest as being the location where White Cedar (*Cupressus thyoides*), Black Spruce, Poison Dogwood, and the American Larch are growing, for they are among the rarer trees of this vicinity.

The portion of Brookline known as Longwood (*long wood*) derived its name from a narrow strip of woodland formerly extending from Aspinwall Avenue to Commonwealth Avenue, near

St. Mary's street. This name was adopted about 1821 when the territory began to be cut up for summer residences. Until then, there were only two or three houses in this district; one was owned by Judge Sewall, for whom the present Sewall Avenue was named. Many of the oaks of this *long wood* are still standing, and here and there other fine trees.

The Boston and Brookline Parkway is an unusually picturesque drive for one so near to city limits. The natural features of the place have been made the most of, while the banks of what was Muddy River have been improved by judicious planting of native and foreign shrubs and trees. It affords an excellent place to study and compare the different maples, oaks, thorns, and so on, and it is to be hoped that in the near future enough public interest will be taken in this subject to induce the Park Commissioners to place labels on the trees — at least on the oldest and finest of them — especially the oaks, a hop hornbeam, and some black birches near the Longwood Avenue bridge, on the Boston side of the Parkway.

I once asked in the Parkway the assistance of a police officer in picking a specimen of a peculiar linden tree (*Tilia platyphyllos* var. *vitifolia*). Now it happened, as I afterwards learned, that the man was very fond of trees and knew a good deal about them. But this particular tree he did not know, and when I called it a Linden, he said, "If that is a Linden, it is different from any that I have ever seen," and to find out if I knew of what I was talking, he tested my knowledge on some of the surrounding oaks and maples. Finding that I was not altogether ignorant, he told me of his great love for trees, and how very few people with whom he came in contact knew one tree from another. After a little further talk about the neighboring trees, I left him, glad to have seen one who made it his pleasure to observe and know the trees while on his round of duty.

We in Brookline are fortunate in having within our town limits a considerable extent of high land, more or less rocky, and low, swampy ground, all favorable to the growth of a great variety of species. Large estates of wealthy residents contain many planted trees, and on one in particular, the estate of Professor Charles S. Sargent are to be found a great variety of exotics, which are not seen elsewhere.

Some years ago foreign trees were extensively planted along our streets and avenues, almost to the exclusion of our native species. Many objections were raised, and now the tendency in planting seems to be in favor of native trees. We should all regret, I am sure, if our wayside trees were exclusively native, when we consider that it is to the European maples, beeches, elms, ashes, oaks, and hawthorns that we owe so much that is beautiful in the autumn. If you have never noticed, do so this year, that when many trees have lost their leaves and stand with bare branches outlined against the sky, there are others with foliage still bright and green, and they are pretty sure to be the foreigners just alluded to. These, all without an exception, hold their foliage longer than our native trees, and make bright, attractive spots in the landscape, at a season when our country would look dreary without them. It is surprising for how long a time the green clings to them. It is until late November and even into December, when the beeches alone are left, and on their branches the brown leaves remain, as they do on some of our oaks, all winter, or until the coming of the new leaves in the spring.

Since 1899 our town has appropriated $2000 a year for planting trees, and for the care of them along the highways. In 1895 a Town Nursery was established which for a time furnished all the trees needed. Over 6,000 trees have been set out, and many have been cut down, sometimes to prevent over-crowding, sometimes for the cutting through of new streets, or widening of others. We regret the loss of a fine group of American Linden trees, that were cut down to make room for the electric cars on Boylston street; also the loss of two rare trees, a striped maple, and a hackberry (*Celtis occidentalis*), which were cut down on account of the grading of the same Boulevard.

If some of our trees are undersize, certainly some are remarkably large, and for a stroll in the woods it is always well to include, beside a note-book, a measuring tape in one's pocket, for without actual measurements it is not safe to determine the size of a tree.

In the woods off Clyde street one day I came upon some very large trees, which at first, from their general appearance, I took

to be oaks. To my amazement, a closer view showed them to be red maples, one of them measuring in circumference at five feet from the ground eleven feet and two inches, or a diameter of three feet and six inches. Not many red maples in this vicinity are more than a foot and a half in diameter, the comparison of which shows the unusual size of the Clyde street maple.

On the south side of Corey Hill is a very remarkable group of sassafras trees. In this State sassafras is usually a shrub or small tree, but here are half a dozen trees, the smallest of which is six feet in circumference, and the largest measures nine feet and seven inches, and has a diameter of three feet.

In Longwood, on a portion of the old wooded ridge, now the Sears estate, there are three trees with low, wide-spreading branches, of which, when first seen in the winter, we had to confess ignorance, but later recognized them to be the white mulberry (*Morus alba*), one with the astonishingly large girth of seven feet and six inches. This tree is a native of China, and is cultivated in Japan, India, and the countries along the Mediterranean for its leaves, which furnish the best food for the silkworm. Some sixty years ago the hope of establishing the silk industry in the United States led to to the greatest horticultural speculation the country has ever known. Nurserymen and farmers covered their lands with mulberry trees, planting a variety of the white mulberry, but the climate in the north proved to be too severe for this variety, and in the course of a few years most of the trees died, thus ruining thousands of people. I have tried to learn something of the history of this Longwood group of mulberry trees, but so far have been unsuccessful. It would be interesting to know whether they were planted about the time of this mulberry enterprise, which was known as the "Morus Multicaulis Speculation."

Though we have a good many large Chestnut trees within our town limits, probably the largest one is found on the Boston side of the line. Standing alone in a field, it has had an exceptional chance to spread in every direction, and although the branches are now decaying, it does not affect the enormous size of its trunk which is sixteen feet nine inches in circumference, and five feet four inches in diameter.

On the Boston side, also, is a magnificent specimen of a Buttonwood or Sycamore tree, measuring a little less than fourteen feet around the close bark of its trunk, and very nearly holding this size to the first branch, a height of twenty feet. A fungus has attacked buttonwood trees which causes them to lose their leaves in the early summer, and then they have to put forth a second crop of leaves, which great expenditure of energy has crippled, or left them in a far from good condition. It would seem as if this tree had escaped some of the misfortunes of its kind, and thus had opportunity to increase in beauty from year to year, and its position has been somewhat sheltered by the numerous elm trees in its immediate vicinity.

These buttonwoods which are among the largest deciduous trees in America, grow to a very large size in the Mississippi Valley, where it would not be unusual to see them with a trunk three times as large as the one I have described. A lady living in its vicinity tells me that she remembers the tree fifty years ago, and that it seemed to her then, a large tree. It is often called Sycamore, and in England it is called the Occidental Plane, to distinguish it from the Asiatic tree which is called the Oriental Plane. The name Sycamore as used in England is generally applied to the Sycamore maple, while in the East a sycamore is a fig tree.

Around the shores of Jamaica Pond in Jamaica Plain, can be seen some very interesting trees, many on the land bought by the City of Boston for a Park Reservation from the estate of the late Francis Parkman and set out by that lover of trees.

The rarest and most remarkable tree is a Hybrid Walnut, on the grounds of Mr. Eben Bacon. It is a cross between our native butternut and the English walnut (*Juglans cinerea* × *regia*). The tree is supposed to have been planted between fifty and sixty years ago. "Garden and Forest" states "there are only two others, so far as is known, in the neighborhood of Boston, one in Cambridge on the Episcopal College grounds, and one in Milton near Houghton's Pond. The three trees resemble each other, and had evidently the same origin, though there is no record to tell their history, and nothing but the apparent intermediate character between two well known species, and their comparative barrenness to justify the belief that they are hybrids."

The most remarkable, as regards size, is an Amelanchier, formerly on the Morse estate, and commonly known as the shad bush. It is usually a bush or shrub, but here it has grown to the height of thirty or forty feet with perhaps a distance of fifteen feet to the first branching. This tree would have been cut down in the laying out of the pathway but for the remonstrance of one who knew and appreciated its value.

The next in interest as regards size is a Striped maple (*Acer Pennsylvanicum*), or Moose Wood. In the Maine woods the tender young branches are a favorite food of the moose; hence the origin of its popular name.

There are Magnolias—the Sweet Bay, and the Large-leaved magnolia (*Magnolia macrophylla*). Its leaves are often from twenty to thirty inches long, and the creamy white flowers from ten to eleven inches across—flowers and leaves being more conspicuous than those produced by any other tree of the North American forests. It was introduced into European gardens a hundred years ago. Another species of magnolia (*M. Acuminata*) popularly called the cucumber tree, because its fruit resembles a cucumber, has been even more extensively cultivated in Europe and in our own northern states. We have counted nine species of magnolias cultivated in our limited area, five oriental and four American species.

Others of special interest are a good sized Silver Bell tree (*Mohrodendron Carolinum*), and a Crab Apple known as Parkman's Crab. This very tree was sent by Mr. F. Gordon Dexter from Japan about 1863, and found a home in Mr. Parkman's garden. It came without a name, and was christened Parkmani,—Pyrus is the botanical name of the genus to which apples belong, so it was called "Pyrus Parkmani." The sames species was afterwards sent to this country by Dr. G. R. Hall, an American physician long resident in Japan, and consequently it then received another name, *Halleana*. It now appears in trade catalogues under both names. It is very similar to the beautiful flowering crab known as *floribunda* from the abundance of its flowers. These Japanese crabs are particularly attractive just before the deep crimson buds expand and show the lighter colors of the interior of the flowers. A little further around the pond is a Tupelo

tree, a species once numerous in the lowlands of this neighborhood, with its shining green foliage in the summer, changing to brilliant red in the autumn.

Unless it be an unfavorable year some of our trees are in bloom from March to December. White or Silver maples take the lead, and they may be in bloom as early as the first week in March. They are quickly followed through the month by poplars, willows, American elms, and red maples.

In April come the yellow-green catkins of the birches, the English elms, ashes, some of the conifers and the Japanese magnolias, the magnolias that bloom before the leaves are out; also the European maples, principally the Norway, with its showy clusters of light yellowish green flowers, followed by the Sycamore maple, with its hanging racemes. These are the two European maples so commonly planted.

May brings the greatest wealth of blossoms; chief among them fruit trees—pear, cherry, and the most beautiful of all, the pink and white blossoms of the apple. Closely vying with them are hawthorns and horse chestnuts, which we might think as beautiful as the apples if we saw them in the same quantity. Then cornels, viburnums, and a host of others, many not as showy, such as the beeches, hickories, walnuts, and oaks.

In June the tulip tree blooms, the wood of which is known as white wood, and is so extensively used in all parts of the country, and the Virgilia (*Cladrastis lutea*) with its conspicuous hanging white flowers, of which a fine specimen is growing in the Public Library yard. It is one of the rarer North American forest trees, but one of the most beautiful flowering, although the flowers come in profusion only every other year. Also the Golden Laburnum and one of the Catalpas (*Catalpa Catalpa*) which somewhat resembles the horse chestnut, with its upright panicles of whitish flowers; and by the last of the month the air is filled with fragrance from the blossoms of the European Lindens. These are just gone, when our American Lindens follow in July, and soon the tops of the chestnut trees are all aglow with blossoms. With one exception, the chestnuts are the last of our native trees to bloom. Being one of the last to bloom, it is nevertheless one of the first to ripen its fruit and I have heard it called the "smartest tree" for this reason.

Now comes another interest in foreign trees; for as ours are fading, they fill the gap until autumn. There is a tree called *Koelreuteria paniculata*, having no English name, which in midsummer shows its great panicles of yellow flowers, followed in due season by light colored bladdery pods, which are conspicuous on the tree even after the leaves have fallen. There is a good specimen here in Boston in the Public Garden.

Two trees from China furnish showy blossoms in August, a month when everyone who can, leaves the city, and thereby misses the sight of these attractive trees. They are Sophora (*Sophora Japonica*), and a Sumac (*Rhus Osbeckii*). Besides two or three Sophora trees in Brookline, there is a very noticeable one on the Public Garden near the Ether Monument. The sumac is a shapely small tree growing on the Boston side of the Parkway, and can easily be seen from the electric cars, as one passes the Parkway on Huntington avenue.

In September, we would naturally say there is no tree that will bloom in this month, but yes—when the late September and October days come, there is the cheerful little star of the Witch Hazel, shining like spots of gold in the midst of decaying leaves and brown branches. Through November and even into December, when the trees have lost their leaves, these pretty little flowers are seen at their best. It is perhaps in January and February that the bright yellow and red twigs of willows and cornels, as well as the red berries of the mountain ash and hawthorns are most appreciated. These, with the conifers, offer the most striking attractions for the winter months, or until March returns, and the silver maples again greet our eyes.

Although these references have been mostly to Brookline trees, the same things can be said of the trees elsewhere. Right here in the midst of this city of Boston, the Common and Public Garden offer excellent places to study trees. There is a good variety, including some fifty-three or more species in the Public Garden alone, and many of them are labelled. There are native trees as well as foreign that blossom through successive months.

The surrounding towns offer still greater advantages. After studying cultivated trees, it ought to stimulate an interest to find them growing in wild places, and to know them is to love them.

It is hoped that this sketch of trees will lead others to find what a world of beauty and enjoyment lies around us.

Who that has seen in the Spring the scarlet flowers and fruit of the red maple, the delicate drooping clusters of the sugar maple, the snowy whiteness of the fruit trees, set off by the delicacy and richness of the tints of young leaves of the birches, beeches, oaks, and others—who, I ask, that has seen them, can willingly spend these days in a city? It is like fairyland, if we but think so, made still more delusive by the singing of returning birds, and the occasional glimpse of some bit of their brilliant plumage as they flit from limb to limb and tree to tree but partially concealed amid the half open foliage. Who that has seen it and felt the enchantment on a bright sunshiny day, can resist it? We give ourselves up to the spell, for in our capricious climate these perfect spring days are rare, and we say to ourselves the years are too few.

Discussion.

J. W. Manning said that he had probably the largest tree of *Rhus Osbeckii* in America. The trunk is a foot in diameter, and the top spreads twenty-five feet. It blooms at the same time with the Sophora, and is very beautiful. He spoke of an elm planted on the day of the battle of Lexington and Concord on the Joshua Gowing estate in Wilmington; it is now seven feet or more in diameter, and spreads one hundred and thirty-five feet. He also mentioned a famous hemlock, eighty feet high and the same in spread, with a circumference of eighteen feet, on the Jacquith estate near the Burlington road. It was known as "the great hemlock," seventy-one years ago.

Hon. Aaron Low said that when he was in the army in Louisiana, he camped in a magnolia grove. The trees were from one hundred to one-hundred and fifty feet high and covered with blossoms. He spoke also of the bay trees, completely covered with pink blossoms before the foliage came out.

Benjamin P. Ware had been extremely interested in the lecture. Few people, he said, notice the great variety of trees about them. They lose much by not observing them. He spoke of the magnolias growing in a swamp in Manchester, the most northern location of the magnolia.

The President said he had been exceedingly interested in the lecture and was further interested to see a lady who had such a love for trees and such a knowledge of them. He has planted a good many trees, some of which are now of stately growth. Every year brings some new tree to try. A locust tree in Worcester has a circumference of twelve feet, and bark four inches thick. It was planted years ago by Mr. Green, the grandfather of Hon. Andrew H. Green.

The Silver Bell sometimes grows to fifteen or twenty feet in height, and is a magnificent sight in flower. The White Fringe is usually a shrub, but with cultivation can be grown to a large tree.

The speaker has fifteen kinds of magnolias; among them two large-leaved, *M. tripetala* and *M. macrophylla*, if protected the first few years, will flourish well. The latter is not so hardy as the former; it grows so late as to be injured by the winter unless protected. Mr. Hunnewell has a fine specimen. It is perhaps the best of all the magnolias. The speaker has also *M. Soulangeana*, *M. conspicua*, and a new one called Alexandrina, which will probably prove one of the best. Even if magnolias fail to bloom the leaves make them worth cultivation.

The Black Walnut is not as much cultivated as it deserves to be. Its leaves are very graceful and beautiful, and it bears an abundance of fruit. There is a new variety from Japan. There are in Worcester black walnut trees ten feet in circumference, and forty feet high. The speaker has in his house a cabinet made from a black walnut tree which he planted.

In Leicester there were formerly a large number of mulberry trees in a place called Mulberry grove.

Jacob W. Manning spoke of a group of Pawpaw trees twenty feet high, growing in a garden in Lowell. Pawpaws are not always hardy but these seem to grow well. There is a White Mulberry tree in Chelmsford four feet in diameter and sixty feet high, with a spread of branches of more than sixty feet.

Robert Manning said he has two Pawpaw trees. They are quite hardy and he had no difficulty in transplanting them, but though they had blossomed, they had never set any fruit.

He wondered how many people had ever seen the young cones of the Larch trees when they first come out in the spring. The

pistillate and staminate flowers of the larch are very charming when closely examined.

The President said that he has three varieties of larch, one European and two Japanese. The cones are exceedingly beautiful and also the foliage. The foliage of *Larix Kœmpferi* is unlike that of any other.

J. W. Manning spoke of a Basswood on the Beebe estate in Wakefield, seventeen feet in circumference and eighty feet high.

Thomas Harrison wished to call the attention of the lecturer to a Linden in Plymouth, which he thought the finest specimen in this vicinity.

A vote of thanks was given Miss Cummings for her very interesting and instructive lecture.

MEETING FOR LECTURE AND DISCUSSION.

Saturday, January 26, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. Hadwen, in the chair.

The following lecture was delivered :

A Visit to Kew Gardens and Hampton Court.

By Benjamin P. Ware, Marblehead.

Among the many interesting subjects suggested by a journey through Germany, France, England, and Ireland, I think no one more appropriate for this Society, than my visit to Kew Garden and Hampton Court.

Kew Garden was originally a private fruit and vegetable garden of seventeen acres, belonging to the Prince of Wales, the father of George III, who began to improve it as a botanical garden and pleasure ground in 1730.

It has received additions from time to time, so that at present it contains two hundred and seventy acres, continuing as private royal grounds until 1840, when it became public and was placed

under the control of Her Majesty's Office of Public Works, with an annual appropriation for its maintenance of £32,650 or $163,250. It is said to be the finest and most complete botanical collection and arboretum in the world. As for tree planting it can hardly be excelled. Kew Garden is seven miles from the centre of London and is accessible by steamboat, omnibus, or steam railroad.

The surface is undulating, with carriage drives around and through the grounds; with broad graveled walks in various directions, opening long vistas through well grown trees, some in rows but generally irregularly planted, with plenty of room for the full development of each tree. Every variety of tree, shrub, and herbaceous plant is plainly labeled, giving an admirable opportunity for study. It was intended that every variety that would grow in that climate should be represented in its very best possible condition, and as the winters in England are much milder than ours of New England many more varieties may be grown there than here.

It is very delightful when traveling in a strange land, to meet any one from your own country, even though an entire stranger at home. I found it even so, to see in this collection specimens of our beautiful white pine, hemlock, spruce, elm, mountain ash, white ash, and oaks; and among the herbaceous plants, our fall asters and golden-rod in variety, and many other familiar friends in perfection, and not excelled in beauty by those of any other country. As tree planting began there more than one hundred and fifty years ago, some of the trees are of large size. Among the more noticeable are a dozen or more Cedars of Lebanon of immense size, four or four and one-half feet in diameter. As they stand well apart, and were allowed to branch out near the ground, they grow in a form peculiar to that species; with their deep green, compact foliage and majestic forms they readily command the attention and respect given to this tree by early scripture writers, who frequently used the Cedars of Lebanon as symbols of strength, beauty, and grandeur. The fragrance and durability of its wood caused it to be sought and largely used in building King David's Palace, and Solomon's Temple. So abundant was it on Mount Lebanon, as to cover it with forest growth, affording material for

four score thousand hewers, in getting out timber for the temple. But alas! like our own forest, they have disappeared. In the sixth century Justinian found it difficult to procure cedar enough to cover a single church. Belon, in 1550, counted but twenty-eight trees; De la Roque, in 1588, found twenty; Pococke, in 1740, found but fifteen in that vicinity, the largest sixteen feet in diameter.

Near this group of cedars in the garden is an immense Scotch Pine, towering above all others, with a clean trunk, about one hundred feet to its first branches.

As an arboretum, Kew Garden compares favorably with our own Arnold Arboretum. The shrubs are in such great variety, so well grown and so plainly labeled that they afford a superior opportunity for study. Rhododendrons are especially fine here, as well as in other parts of England.

A wonderful collection of over six thousand flowering, hardy herbaceous plants, embracing more than one thousand varieties, may be seen here, all distinctly labeled; among them the original wild chrysanthemum brought from the hills of China one hundred and five years ago. It was the first introduction into Europe, making our magnificent chrysanthemum shows possible, as well as the one held last November at the Royal Aquarium in London, where its small yellow flower was shown in contrast with the latest triumph of the florist, a flower fifteen inches in diameter.

The most noticeable structure in the garden is the Chinese Pagoda, built in 1761. It is one hundred and sixty-one feet high, a magnificent structure, made especially conspicuous by the lay out of the landscape, so that it may be seen directly in front from several points, through long irregular lines of trees. Another very prominent object is the flag staff, a single spar of Douglass Pine brought from Colorado, supposed to have been two hundred and fifty years old. It is one hundred and sixty-three feet high, with twelve feet under ground, enclosed in solid brick work, to insure its security from wind and decay.

The palm house is probably unequaled in beauty and grandeur the world over. It is three hundred and sixty-two feet long with an ell on each side of fifty feet, one hundred feet wide, sixty-six

feet high, and filled with a great variety of palms and plants requiring the same conditions. Many have grown as high as the top of the building, and all are in perfect condition.

The horticultural museum is a large three story brick building, containing an herbarium, library, and many horticultural curiosities of interest. Between these two principal buildings is a very beautiful artificial pond, which makes a frontage for each building. The pond is alive with goldfish, swans, pelicans, ornamental ducks of the most beautiful varieties, and other water fowl. Around this pond are beds of flowers of the most brilliant and showy kinds. The beds are of artistic design and planting, with the intent of making this part of the garden the fairy scene that it is, beggaring description.

There is a wood museum, containing specimens of wood from all of the British Colonies, and other countries, with some curious freaks of growth; also seventeen or more greenhouses adapted to the needs of different families of plants supplying each with the necessary conditions for their best development. One of them is devoted to exotic water lilies, among which the *Victoria regia* is prominent.

Another is devoted to the cultivation of the citrus family of fruits, and another to the cactus in great variety. Among the many varieties of trees, some are of very curious habits of growth. Especially noticeable is the Chili Pine (Araucaria,) sometimes called the monkey puzzle, I suppose from the difficulty a monkey would have in climbing through it. A portion of the ground is set apart as a wild garden, with a perfect tangle of trees, shrubs, and herbaceous plants, in an apparent haphazard manner without order or design, and yet displaying much hidden artistic skill in the arrangement.

A conveniently designed temperance house for the benefit of the crowds of visitors during the season is centrally located amidst this beautiful garden scenery.

Miss Marianne North, an exquisite flower painter, devoted her life to travelling the world over, painting from nature flowers found in her extended travels, thus producing a true picture of each. Her collection contained eight hundred and thirty-three pictures, which she gave to the garden for the benefit of the public. They

are arranged in a brick building which she provided especially for them, adding very much to the beauty and interest of the garden. Where there are no flower beds the surface is a beautiful English lawn, such as we have often read of; so closely shorn, so green, so soft is it, that one is reminded of a velvet carpet. The signs are not "keep off the grass," but "please do not tread upon the edge of the grass," which is kept square and clean cut. When any portion of these lawns shows signs of exhaustion, the sod is carefully taken up in rolls, a heavy coat of old stable manure forked in, then the sod is replaced so carefully that no sign of its removal is noticed.

Kew Garden is so accessible, so beautiful, and so instructive, that it is not surprising that as many as ninety thousand people have visited it in a single day.

The Palace at Hampton Court is fifteen miles distant from London, and seven miles beyond Kew Garden, and is reached by the same lines of travel, continuing through Kew and Richmond by omnibus, or, if one prefers, by a coach and four-in-hand from Piccadilly Circus on Sunday mornings. The approach to the Palace is through Bushy Park of four hundred acres, by a broad avenue about one mile long. On each side of this avenue are fine rows of horse chestnut trees set fifty feet apart. These trees are two or three feet in diameter and about eighty feet high and cover a space, including the avenue, with their shade not less than eight hundred feet wide. Fancy them in May, when in full bloom; such a display of beauty and magnificence would alone repay one for going to London to see it. This park is occupied as a deer park and there are hundreds of deer as tame as sheep, feeding or basking on this immense lawn, singly or in groups. The Palace is an imposing structure of brick with stone trimmings, forming three quadrangles, surrounding an open court on three sides. Two of these were built by Cardinal Wolsey early in the fifteenth century, and when finished presented by him to Henry VIII. The beautiful Eastern front was built by Sir Christopher Wren in 1689 for William III, and is three hundred and thirty feet long. Much of English history during the reign of the Tudors was associated with Hampton Court: Edward VI was born there, and there his mother Queen Jane Seymour died. It was the prison of Charles I for many years, and Oliver Cromwell delighted to make it his

residence for much of his time. There are at the present time thirty-six rooms open to the public in the Palace; they are all finished in oak, the door and window frames richly carved. The walls of all are hung with fine paintings of various subjects. Full length portraits of kings, queens, and other famous persons are numerous among the works of the old masters. One room is wholly devoted to the pictures of Benjamin West; another contains the famous cartoons of Raphael. As the rooms are all connected by doors, they appear like a continuous picture gallery, containing in all eight hundred and ninety-seven pictures. Each room had its special use when occupied by the royal families in years of long ago, and still retains most of the furniture then used. The Queen's sleeping chamber contains a richly carved bedstead eight feet wide (the usual breadth of royal bedsteads throughout Europe) with a very high canopy at the head; the mattresses are covered with satin, and the other furniture upholstered with rich silk velvet.

The great hall built by Henry VIII, from its size, height, gorgeous stained glass windows, elaborately wrought roof, and walls hung with immense elegant tapestries, is decidedly the most magnificent hall of any in the Tudor Palaces. For three and a half centuries it was used for state functions, royal banquets, receptions of foreign ambassadors and theatrical performances. It is said that here King Henry often sat in state or danced with his favorites, Jane Seymour and Catharine Howard.

The Queen's Chapel is still in use for the people living in the vicinity. I attended the High English Church service the Sunday that I was there.

The garden of forty-four acres was laid out on each side of the Palace by William III. The right side, called the pond garden, is in the Dutch style, with elevated terraces, sunken paneled lawns, arcade walks formed by flowering shrubs, flower beds, and a goldfish pond. And here is the cold grapery, containing the famous Black Hamburg grape vine one hundred and thirty-two years old. The stem at the entrance of the glass house is one foot in diameter. There it sends out three or four branches three inches in diameter. These are trained so the whole roof of one hundred feet long and forty feet wide is completely covered;

and so carefully pruned and thinned are the bunches of grapes, that the crop of twelve hundred clusters hang at about equal distances of one foot apart from every part of the vine. As I saw them, fully ripe and well colored, they presented a sight that I never shall forget.

These grapes were subject to the late Queen's orders, who sent them to hospitals and to the sick, but she had graciously refrained from having a single bunch cut until I had seen them in their full glory. This enormous crop is maintained by an annual application of a heavy coat of old stable manure and ground bone, which is forked into a plot of ground, about as large as the grapery, just across a graveled roadway, the main roots passing under the road to this feeding plot.

The part of the garden on the other side of the Palace is differently arranged, and principally planted with larger shrubs and trees. Here is a maze, and unless you have your nerves well under control of a strong will power I would not advise any one to enter alone, for there is danger of a panic that might prove injurious.

Standing in front of the beautiful and imposing principal façade of the Palace one looks out upon a vast expanse of park scenery of eleven thousand acres. In the foreground is a fountain and in front is the Yew Park, planted with Yew trees two hundred years ago. These with their very thick, deep green foliage, the pistillate plants bearing an abundance of bright scarlet berries, present a very beautiful and unique feature in the landscape. They seldom grow higher than thirty feet but with a very large thick trunk. They live to a great age. There are several in England supposed to be from seven hundred to a thousand years old. There is one at Darley, Derbyshire that is fifty-five feet high, with a trunk nineteen feet and three inches in diameter; others, in Scotland and Ireland, are of about the same size, and are supposed to be as old as the Christian era. Virgil and Pliny both declared that the Yew tree was neither useful nor ornamental, but noxious and deadly poisonous in both foliage and fruit, while others have since said with equal authority of the foliage, that even its shade might be injurious, but the berries may be eaten with impunity. I ate of them without injury. The timber is comparatively indestructible and is of a beautiful brown color, and

takes a fine finish. It was formerly much sought for as being the best material for the long bow, used by the ancient English archers. It was regarded with great superstition by the heathen nations of old as being associated with death, but by Christians as emblematical of immortality, and, therefore, it has been much planted in cemeteries.

Opening out from the Yew Park, fan-like, are five broad graveled walks about fifty feet wide extending as far as the eye can reach. The middle one ends in a pond of the same width, well stocked with fish for the angler, and used as a skating rink in the winter. These walks are lined on each side with full grown English elms and linden trees about eighty feet high, with trunks from two to four feet in diameter. The branches of these trees are trimmed up uniformly about eight feet from the ground, showing an even uniform surface under the trees for the whole distance, a system of tree planting entirely different from that at Kew Garden, but beautiful in its oddity.

Far beyond, out of sight, is the Queen's farm, where formerly she kept her dairy, and bred Durham and other cattle, besides choice swine and sheep. She had relaxed her interest in those somewhat, but continued to breed cream-colored horses for her state team of eight to be used only on great State occasions, and three-quarter thoroughbred saddle horses, of which fifty or more are required for use at the Mews or royal stables at Buckingham Palace in the city of London.

On motion of Thomas Harrison a vote of thanks to Mr. Ware for his interesting and instructive lecture was passed.

At the close of the lecture twenty steriopticon views in Kew Gardens and vicinity were given by John K. M. L. Farquhar, which added much to the interest of the lecture.

BUSINESS MEETING.

SATURDAY, February 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The Annual Report of the Committee on School Gardens, School Herbariums, and Children's Herbariums was presented by Henry L. Clapp, Chairman, who gave a verbal abstract of the Report. The Report was accepted and referred to the Committee on Publication.

Joseph H. Woodford, Chairman of the Committee of Arrangements, reported the following vote, which had been unanimously adopted by that Committee:

At a meeting of the Committee of Arrangements held this day, February 2, 1901, it was voted to omit the exhibitions scheduled to be held on May 4th, May 18th, June 5th and 6th, and June 15th, owing to our having to vacate this building on May 1st. The Society's first exhibition in the New Hall will be the Rose and Strawberry Exhibition on June 20th and 21st.

J. H. WOODFORD,
Chairman Committee of Arrangements.

A copy of a letter from Charles S. Sargent of the Building Committee to the Chairman of the Committee of Arrangements, relating to the time when the new building of the Society would be ready for use, and a letter from William J. Stewart, Secretary of the Building Committee, to the Secretary of the Society, on the same subject, were read.

The report of the Committee of Arrangements was accepted, and the changes adopted by that Committee, as reported in the above vote, were confirmed.

Ex-President William C. Strong, to whom, as a sub-Committee of one, the matter of the meeting of the American Pomological Society was entrusted by the Executive Committee, to which it had been referred, stated that it was not deemed advisable to appoint delegates at the present time, but recommended that the Secretary notify the Pomological Society that delegates will be appointed.

Mr. Strong also, as Chairman of the Committee appointed on the 3d day of March, 1900, to confer with the Boston Co-operative Flower Growers' Association in regard to holding the next Carnation Exhibition of that Association in Horticultural Hall, reported that the Committee had conferred with the Flower Growers' Association, but that no conclusion had yet been reached.

On motion of Ex-President William H. Spooner, it was voted that the use of one of the Society's Halls be offered to the Co-operative Flower Growers' Association for their Carnation Exhibition the present year.

Mr. Spooner also moved that a Committee of three be appointed to procure a portrait of Ex-President Appleton. The motion was carried, and the Chair appointed as that Committee, Mr. Spooner, Benjamin M. Watson, and C. Minot Weld.

A letter was read from Charles E. Cotting offering to the Society, in behalf of the Trustees of the Paddock Building, the purchasers of the Horticultural Hall estate, the statues now on the building, to be removed by the Society prior to the termination of the existing lease; also offering to give and deliver, when the building is torn down, any box which may be found in the corner stone.

It was voted that the offer be accepted on the terms mentioned, and that the thanks of the Society be presented therefor; also that the Secretary inform Mr. Cotting that the Society would be glad to retain the two marble tablets in the staircase hall, commemorating the foundation of Mount Auburn Cemetery by the Society and the erection of the present building.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

Henry Illenberger, of Brookline.
David Welch, of Dorchester.
Miss Jemima R. Wilder, of Dorchester.
Miss Grace S. Wilder, of Dorchester.
James B. Shea, of Jamaica Plain.
Mrs. Thacher Loring, of Brookline.

Adjourned to Saturday, March 2.

MEETING FOR LECTURE AND DISCUSSION.

Saturday, February 9, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. Hadwen, in the chair.

The following lecture was delivered:

Growing and Exhibiting Vegetables and Fruits.

By Herbert R. Kinney, Worcester.

This subject is one of such large proportions that I shall not try to cover it in any systematic way, and shall not consider the raising of either vegetables or fruits otherwise than to speak of certain methods and conditions that are likely to give desired results.

Perhaps there never was a time since the existence of horticultural and agricultural societies, when there was greater need of giving this subject careful consideration than at present. In the early agricultural and horticultural exhibitions there were neither so many varieties shown nor so much money distributed, and the exhibitors were more what might be called amateurs than at the present time, and I, for one, am very sorry to see the amateur exhibitor being driven out by the professional. I will admit that I am one of the latter, and fear that I may be obliged to stay in that class, but my sympathies are certainly with the amateur.

It might be well to explain my idea of the amateur and professional exhibitor before going further. I shall consider the professional exhibitor one who exhibits for the dollars there are in it, and the amateur for the satisfaction of exhibiting exceptionally fine specimens and who would under no consideration enter an exhibit unless it showed considerable merit. The true amateur does not object in the least to being beaten, because when he is beaten he can see that there is still a chance for him to improve, and that is the height of his ambition. He is not considering the value of the prize, but rather the perfection of the fruit or vegetable he is growing. Not so with the professional; while he likes to show good specimens, he is ever keeping an eye on the cold cash, and he is willing to have his name on exhibits that he real-

izes are not a credit to him because he knows that he is likely to draw a prize on only common stock, sometimes, and the dollar is what he wants.

I should not wish to have a society discriminate for or against either the amateur or the professional exhibitor, for both are needed to make up a large exhibition and they both get benefit from meeting and from the exhibitions, but it makes it more difficult to run an exhibition satisfactorily than it would be if the exhibitors were either all amateurs or all professionals. I think you will find that the strictly amateur exhibitor is becoming less and less a factor in vegetable and fruit exhibitions every year, and if such is the case, it is certainly time we were giving the subject serious consideration. It is not because the professional grower cannot grow as good specimens, or that he cannot arrange them as well as the amateur, that we should strive to keep the latter with us, but because he is carrying out the ideas of the founders of the horticultural and agricultural societies. If there were no large money prizes there would be no professional exhibitors, and no money prize is really worth any more than the face value of the prize; but if the prize had no money value the competitors might spend any amount to secure it. I am of the belief that every large society should offer some prizes, every year, that have other than a money value. There would be no use in offering such prizes if there be no interest in amateur horticulture, but it seems as though there should be gentlemen in this society who would like to compete for a gold medal, who would not think of trying for a money prize. Do not think that I would advocate substituting medals or silver plate for the money prizes offered at the present time, but if we could have one amateur prize at each of the large exhibitions and have it competed for with the same spirit that some of the cash prizes are, it seems to me it might revive an interest that I fear is fast dying out.

The offering of large money prizes has had a tendency to foster professional exhibitors, not only about the home of the societies offering such prizes, but back in the country as well, and it is a very great benefit often to the country exhibitor to attend the large exhibitions and compare his produce with that from other sections of the state. This makes it very important that these

large exhibitions be run in the very best possible manner, as the country exhibitors are many of them close observers, and when they go home it is very desirable that they carry the idea that the large society is run on broad principles and that the best exhibits get the best prizes. There is nothing so bad for any exhibition as to have the exhibitors feel that there is any partiality shown in the awarding of prizes or that the judges will not give every one an equal chance. It is usually claimed that there will be some kicking anyway, but those who get the prizes will be satisfied. The conscientious exhibitor, however, only wants the prize he deserves, and if he gets more he loses confidence in the integrity or judgment of the judges, and his opinion is very much the same if he does not get what he thinks he should have. The public is equally disappointed if the judging is bad.

Our subject is the growing and exhibiting of vegetables and fruits, and you may ask why I am considering judging. The amateur exhibitor may care very little for the opinion of the judges, but in my opinion he is not a large factor in exhibitions of today. The professional exhibitor spends more thought on what will please the judges at the exhibition where he intends to compete, than on the actual merits of the exhibits he puts on the table.

I prefer a single judge to award prizes, because if one man has to make the decisions he must use due care and have a reason for making them, bnt if there are a number of judges the decisions are usually a compromise, as no two will agree every time if the competition is close, and in such cases you get no one's judgment.

There can be no general rule regarding the proper size of vegetables or fruits for exhibition, but the present custom of exhibiting vegetables of a smaller size than formerly, is a great improvement. This applies particularly to such vegetables as potatoes, beets, carrots, and parsnips, as the tendency of these is to grow too large ; but with such as salsify and horseradish, the larger they are (providing they are fairly smooth), the better. To have any of these roots in good condition to exhibit, they should be matured, or nearly so, and to get the plumpness and color which is desirable they should have an abundance of potash. In fact, I think that potatoes, carrots, and parsnips do better if grown on

a good fertilizer. A good coat of manure the season before, seems to do them good. Beets and horseradish will do nicely on heavily manured land. Carrots that are sown late seldom make nice exhibition specimens. They may attain good size, but lack in color and fulness. It is as necessary to have a carrot ripe to be in prime condition for the exhibition table as it is a strawberry. Many would say that to compare it to the Baldwin apple would be much better than to the strawberry, but I think there are few of our vegetables that are in their prime for the exhibition table for a shorter time.

The one vegetable of the rich and the poor that is in use during the whole year and on nearly every table once a day is the potato. It is generally grown by almost every one who has a garden, with the exception of those located near large cities, where the land is very expensive and there is a very large quantity of stable manure used; still it is not shown to perfection as often at it should be at our exhibitions, yet much better now than formerly. The tendency to give the prizes to extra large specimens is not encouraged now, and, as I have intimated before, the exhibitors are after prizes, so if the judges recognize only medium-sized, smooth specimens, those will soon be the kind exhibited. While I say "medium-sized" it will do to go rather above that size if the potatoes are good shaped and show no signs of coarseness, a defect which should never be encouraged. Whatever the size, the skin should be full. To grow potatoes that have all of the good qualities and none of the faults is not always an easy matter, and after they are grown it is often hard to find twelve that are alike, even when the crop is good. One can find two or three that will just suit him, but it is very often necessary to throw these aside and take some that are not so good, as a few extra nice specimens have a tendency to make poorer ones look poorer than they really are. It is probably much easier for any of us to recognize a nice plate of potatoes, than to tell just how to produce them. On general principles, potatoes are smoother and of much better quality when raised on new ground, not necessarily virgin soil, but the first or second year after breaking up, and where the animal manure, if used at all, is plowed well to the bottom and the potatoes are *largely* grown on chemicals or

fertilizers. A good, acid-cut fertilizer I consider best. A liberal amount of nitrogen and potash are essential, and there should be some available phosphoric acid; a combination of 4 to 5 per cent of ammonia, 7 to 8 per cent of available phosphoric acid and 7 to 8 per cent of potash, I think would give better returns generally than one not so evenly balanced. If you know exactly what your land lacks you can, perhaps, make up the deficiency; otherwise it is doubtful economy to try to save money by buying low-grade or poorly balanced fertilizers.

I have raised potatoes of fair quality and smoothness on very heavily manured market-garden land, but they are not a crop that responds to heavy manuring. To grow the best and handsomest potatoes possible, I would use no manure the year the potatoes are planted, but from 1,000 to 2,000 pounds of good fertilizer per acre; about one-half broad cast and one-half in the drill, thoroughly mixed, using large seed cut to two eye pieces, and planted about the first of May in drills from eighteen to twenty-two inches by thirty to forty-two inches apart (the latter distances for the late varieties). Give thorough cultivation and plenty of Paris green and Bordeaux mixture, and you should have potatoes of the best quality.

Perhaps there is no vegetable that is more often exhibited and wrongly judged than celery. Celery, to be good for the table or market, should have a head as much as lettuce or cabbage, and to get this head it is necessary to sacrifice the older leaves; in fact, as you bring the head to perfection you lose all of the outer leaves, but the same is true of lettuce or cabbage, and who would think of giving a prize to lettuce or cabbage because it had a great spread of leaves? It may be possible to sell these great bunches of celery leaves, but I doubt whether there is a dealer inside Faneuil Hall Market who would buy one; they know celery there. It seems to me that every horticultural and agricultural society should try to encourage the people to raise the best of produce, and that we have not always done this in regard to celery. Bunches of what I shall call "celery leaves" may occasionally be picked from among heads of good celery but the methods of growing the two are entirely different. To grow the bunch of celery leaves, the plants must have considerable

room and a long season of growth. They may grow quite rapidly at first, but should continue growing less and less as they near maturity, because a sudden start will cause the heart to develop, the outer leaves to soften, and a head will then begin to form. The older gardeners can well remember when there was a demand for big heads of *celery*, not bunches of celery leaves. I have seen them and have raised some, but do not try to grow them now as they are not wanted in the markets. I would not object to the awarding of prizes to large heads of celery, for it is one of the few vegetables to which size may be considered an advantage, but the point is *size of head*, not of *plant*. I have seen bunches of celery on exhibition which were from six to eight inches in diameter that had practically no heart. It should be the duty of the judges, where such celery is shown, to pick off the outer leaves from one of the heads so that every one can see how utterly worthless it is.

As I have spoken about growing the bunch of celery leaves, perhaps it would be well to say a few words about growing the heads of celery. The method early in the season makes but little difference except in regard to the size of the head. If you would have a shouldered head of nice proportions and not too tall, the plants must be set ten or more inches apart; but if you want nice celery for family use or market, from four to six inches should give a more satisfactory crop. To get celery of the best quality it must be grown rapidly and it is quite important that it should take a little extra start when we begin to blanch it. Celery that is banked with earth gets this start from the cutting of the roots, and the chance that those roots which are left get to work up into the soft earth of the bank. Perhaps the best way to start Golden celery that is to be boarded, is to give a good watering and work the ground about the time the boards are set up. This gives celery of fair quality; but no method will give as good celery in the early fall as can be produced later when the weather becomes cooler. Celery grown in this way will not keep so well as that of poorer quality.

There is one more point in the exhibition of vegetables to which I wish to call your attention, and that is, the danger of losing our type or of recognizing varieties that have no type of

their own. At the present time when every seedsman has to have something new almost every year, if you consider how many there are in the seed business you will see that our so-called *varieties* multiply rapidly, and while some of these may be entirely new a very large part of them are practically like some varieties that are already in cultivation. These exhibitions are supposed to be run to educate the exhibitors and the public, but if they are to be of any use in that line, the judges must see that exhibitors hold strictly to the type of the variety they exhibit. Exhibitors will often say that "I bought the seed for such a variety," and think that should be sufficient. While that may be all they can know about them at first, the judges should satisfy themselves about the type, and then stick to it. To illustrate this I will mention the tomato, of which there are a great many varieties of the same color, but with several distinct types.

I think that in the fruit exhibitions we find rather more of the amateur spirit than in the vegetable department, but the professional is here also, and is usually able to secure his full share of the prizes. In the vegetable exhibition as a rule we cannot consider size of specimens a very important factor, but with fruit it is different, as there seems to be no objection to large size in any of our fruits, provided that they have color and smoothness, and for that reason we may consider size of very considerable importance in fruit of all varieties for the exhibition table, but there are other things that must be considered. All dessert fruits, to be of value for market or attractive for home use, must be handsome in color and form. Cooking fruit, to be of the best quality, must be fair and fine-grained. So we have several things other than size to consider in the fruit exhibits, and I think it important that the judges of fruit at our larger exhibitions should try to encourage the growing of fruit of the best quality as well as of largest size; for instance, a very large apple of poor color and quality is of but little value, and a small strawberry of fine color and quality is equally undesirable, from a commercial point, at least, so we should consider that size and color must go together to make a perfect fruit.

Very many varieties of fruit are shown, especially at our agricultural fairs, long before they should be ripe, and there is an

endeavor to get a color similar to what the fruit should have when ripe, but this is all wrong, because we do not want Baldwin apples ready for the table in September, or Northern Spy in October.

Judges who consider color the most important quality of fruit, are likely to do more for the good of the fruit interests than those who consider size of the first importance; but the ideal fruit is one of good size and good color.

There is a difference of opinion among fruit judges in regard to imperfections. Some claim that a plate of fruit is no better than the poorest specimen, and they will often throw out a plate because of a defect in a single specimen, when those remaining are very much better than any other whole plate. Other judges claim that if the eleven are better than any other twelve, then they should have the prize. For my own part, I believe the latter are right, because it is the growing of the fruit we wish particularly to encourage. The nearer alike all specimens on a plate of fruit are, the better, but we must not let any of these technical points divert us from the objects of the societies, which were not organized to make professional exhibitors, but to encourage the growing of better produce. It may seem that I am giving too much attention to this part of the exhibition, but it is one that we should keep constantly in mind.

While size and color are in general the two most important qualities in the fruit exhibition, when we consider the peach, we should use a great deal of care, or we may encourage the exhibition of the product of disease. Perhaps there is no other fruit that is increased in size and color, as is the peach, by disease. It has been so that there was no use in showing sound peaches at some exhibitions, as the prizes were all given to prematurely ripened fruit. I have seen prizes for Early and Late Crawfords given to peaches between which one could hardly tell the difference. It is not uncommon to see the prizes given to ripe Elbertas and Crosbys early in September, when the sound fruit shows no signs of ripening. These displays of diseased peaches may take better with the public and are certainly more of an attraction than good sound fruit, but I believe they are against the promotion of horticulture.

Mr. Kinney, in the course of his lecture, exhibited a root of

celery showing the crisp heart and worthless, because tough and fibrous, outside stalks. He also exhibited an ideal Baldwin apple, which showed red in September and has since brightened. He said that we must consider size, whether we go above or below the normal. The smaller specimens are usually brighter in color and finer in grain than the larger.

Discussion.

Hon. James J. H. Gregory said that he had listened to the lecture with great interest and profit. There is a class between the amateur and professional,—the farmer, who exhibits partly for honor and partly for money. Mr. Gregory said that he is perhaps the largest exhibitor in Essex County, and he is convinced that there is no money in exhibiting vegetables. He never got more than dollar for dollar by exhibiting. There has to be a great outlay of time in selecting a dozen specimens of the same size. In this Society there is a varying standard. Weight and size are too much the standard here; quality should be the standard. We would not buy the squashes and onions which take a prize here for our own use. Prizes for squashes are often taken by specimens which are not ripe. If drawn in where the stem is joined, the squash is ripe. Hubbard squashes weighing seven or eight pounds used to take prizes which are now awarded to overgrown specimens that are worthless, and the societies are responsible for it.

He would depend largely on potash rather than on barnyard manure. If potatoes are thin you can plump them by giving them potash. He would give as much as ten per cent.

Thomas Harrison said that a potato thick in the middle is hard to cook. The shape of the potato is of importance. One long, and even all the way through is more easily cooked. He prefers the flat varieties.

The lecturer said that any potato wants to be as thick as the variety calls for or you get a poor potato. Some potatoes are naturally thick like the Hebron.

Hon. Aaron Low did not agree with Mr. Gregory as to the awards. The Committee have made the rule that onions, for instance, should correspond to the ideal of the variety shown. When

there have been large displays of foreign onions they have always given preference to the Danvers.

Varnum Frost thought Mr. Gregory a little wrong in what he said about squashes. He knows a ripe squash as well as Mr. Gregory. He used to tell one by sticking a knife in; now he strikes it with a stick. He says there is no money in getting up a collection,—it takes too long to find specimens alike.

The lecturer thought that low ground that is strong, so that it will not wash away or blow away, is good for apples.

Mr. Frost said it is a simple matter to grow strawberries. Nine-tenths of farming may be learned from observation. Prizes should be awarded for the largest and handsomest strawberries. The Marshall is the best of all. Many people are disappointed in the Marshall because they do not know how to grow it. It will not do to set the Marshall on land that is sour. It must not be set on land that settles and will be hard. The rows should be four feet apart and the plants eighteen inches apart in the row. The plants should be elevated two or three inches above the level of the row. Set the plants in August; if as late as the middle of August, let no runners grow. Avoid walking near the plants. Clay is needed if you wish to get the largest berries.

Samuel H. Warren said there are but few localities where the Marshall will grow well. There are many kinds nearly as good as the Marshall of which you can get ten quarts to one of the Marshall. The Ridgway, originated in Indiana, is one of the best for the home garden. It will give three times as many berries as the Marshall. It is not quite so large and the color is not so good, but it is a splendid strawberry and you can rely on it. The Sample is very handsome and very productive, but it lacks quality.

Mr. Frost said every plant should have a hundred square inches. He finds no variety that will yield as many berries as the Marshall. If they do not yield well it is because people do not know how to grow them. He knew of a man in Lincoln who had a bed of strawberries planted so close that the sunlight and air could not get in. The bed was so handsome that he called his neighbors to see it, but he did not raise a berry.

Mr. Low thought there is no fruit of which you want to know

so much as the strawberry. If you have a clay soil the Marshall is the ideal berry. Some varieties need a sandy soil. Thirty or forty years ago the Hovey's Seedling was the ideal berry. You must know what kind of land you have got and plant varieties that will grow on that land.

Mr. Gregory said that Russet apples are most successful on land with a large proportion of clay.

The lecturer would use no manure on grapes. Bone is better, but it acts slowly. The wood should ripen early. In the ideal vine the joints are short. If your ground is rich, mulch it with hay rather than manure. The secret of growing grapes is to get good wood. He uses bone and ashes and some sulphate of potash.

Mr. Harrison had spread lime and wood ashes over leaves on the ground.

The lecturer said that to grow the best quality of apples he should not work his orchard at all. It is practically impossible to get very large fruit from land that is not worked, but the quality is better. Apples are not as firm or as high colored in cultivated ground as in pasturing. He advised a man in Newbury who had had no apples from his orchard for three years with clean culture to lay it down to grass, seeding thinly. There is no way to keep grass out of the orchard so well as by cows. It is well to work a young orchard until the trees get to bear a barrel or two. He would not have a limb so low that a cow could reach it. The fruit is not so good from a tree branching low. Train up high and let the limbs hang down. As trees begin to bear the ends of the limbs die off. He would make a new tree by pruning. If a tree is growing fast a large wound will grow over quickly. You want new, bright wood. Apply no fertilizer under the trees. The place to apply it is in the centre of the rows. The speaker was convinced that trees should be scraped and then painted over with Bordeaux mixture. There are many insects under the scales but he would not cut into the live bark.

Mr. Gregory said he had an orchard which bore little fruit. He scraped the trees and they bore better the next year. Baldwins from uncultivated ground keep better than those from tilled land.

A vote of thanks was unanimously passed for the lecture.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 16, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

THE ADVANCEMENT OF MARKET GARDENING IN THE PAST TWENTY-FIVE YEARS.

By MICHAEL SULLIVAN, Revere.

The question is often asked, what is market gardening? We find the kitchen garden, originally devoted to the cultivation of culinary vegetables for private use, enlarged so as to admit a commercial side, and a continuous enlargement caused by demand of local and surrounding communities.

The kitchen farmer or gardener has moved up a degree to the commercial or market gardener.

Horticulture, the twin brother of market gardening, on account of its close relations and the use of the greenhouse and hotbed in forcing crops, and the propagation of plants by each, can well be classed with market gardening as one and the same business. There is a difference between this and agriculture, owing to the small area of land required in the operations of one and the large area required by the other. The manner of cultivation, and large variety of crops produced well make a distinction.

The business of market gardening in the neighborhood of all cities increases always on a scale proportionate to the greatness and wealth of the city, and its progress and development will depend much upon the demand for the crops which can be produced profitably in the vicinity of those cities. Boston and surrounding cities have long been noted as having the most exacting markets in the United States as to the quality and neatness displayed in the preparation of all fruits and vegetables offered for sale.

The result of this continuous demand for the best, and the good prices generally to be obtained, have been the cause of son succeeding father in the line of producer, generation after generation;

and this going on since the early settling of the country, has resulted in as high an order of intelligence as can be found anywhere in the world where market gardening or horticulture is carried on. They have been the founders of this grand Massachusetts Horticultural Society, whose good work is spreading throughout this great country, their great Boston market speaking at all times for the quality of their good work.

The changes and progress constantly going on in all lines of human effort are to the ordinary mind at times almost incomprehensible; that in the space of one life of average duration, one can see those great changes and improvements may well be called a Divine favor.

Along with all other lines of human work, that of the agriculturist has kept pace, and has advanced wherever science and scientific knowledge have availed. The agriculture of fifty years ago, whether on the farm or in the market garden of those days, seems as remote and ancient in comparison with modern methods as would the workshop of the manufacturer or the machine shop of the most skilled mechanic of those times. Still old Mother Earth, the foundation of all wealth, remains the same.

The tillage of the soil and preparation for the seeds are not the only improvements; the hand of science has come to the aid of the agriculturist, and whether applied on the farm or the market garden, this aid has been of material advantage.

Who but the practical engineer and scientist could explain the advantages of underdraining the soil, transforming thereby what was before a waste into a productive and fertile field; who but he, could so well explain that by underdraining, the wet and soggy soil could be made warm and productive, so that the full benefit of the manure which might be applied could be made available. And so on, step by step, the scientist directs the practical hand of the farmer and market gardener, changing the old time farmer himself into the practical and scientific market gardener of today. Every day on every hand we are told that we are living in an age of progress.

In looking backward a quarter of a century, with all its changes, time seems short in comparison with the twenty-five years yet to come, and now, in the very beginning of the first quarter of the twentieth century, there can be no doubt but the advanced intelli-

gence and the high education of both men and women, must largely exceed that of the past quarter century.

The advancement and development of market gardening in the past twenty-five years is a subject well worthy of a pen more able than mine. However, thirty years and more of continuous labor in any line should leave one master of his business.

The market garden, more than any line of agriculture, should be worked on strictly scientific principles: that is, exact knowledge of the requirements of all the crops under cultivation, whether in the open field or under glass.

A close study should be made first of location and approaches thereto; then soil —its composition, both of surface and subsoil, and perhaps climatic changes caused by location, for it may be near the ocean, and therefore have less snow to contend with — or inland, with its late and early frosts, and heavy and destructive showers in the growing season. Along all these lines science now comes to the aid of the intelligent market gardener.

Books on market gardening written and published at the beginning of the past quarter of a century, classed at that time as "standard works on American gardening," plainly show its advancement and development, when compared with the standard works written and published today. While there were to be had excellent standard works on agriculture and plain farming, very little of value could be found on the subject of market gardening.

"The Field and Garden Vegetables of America," by Fearing Burr, Jr., was published in 1865. "Market Gardening for Profit," by Peter Henderson, 1866, was the first and most valuable practical work published, which was then available to the American market gardener. This book, more than any other published in this country, opened up the entire field of commercial gardening. What were considered "trade secrets" before its publication, were made available to all, and the enlargement and spreading out of the market gardening business all over the country can well be dated from this publication. Here, in a condensed form, is printed information as to those who are best fitted for the business, the monthly calendar giving directions to guide the practical gardener throughout the year.

The time has long since gone by when the average farmer or

market gardener took the view once credited to him, that information obtained from books was of no value. The agriculturist and market gardener require the best books for their study as well as the architect or mechanical engineer, for in either case the books are an essential part of the tools to work with. Today books are to be had on almost every conceivable subject in agriculture and the growing of special crops. What was once guarded as a trade secret is now found written in books, magazines, and the agricultural newspapers. Therefore I shall leave out all detail in this paper as to the growing of crops or the preparation of the soil, only referring in a general way to the great changes so rapidly taking place.

Again referring to the most advanced work published in 1866, how ancient and primitive seem the greenhouse and forcing pit of that time compared with those of today. But it can well be said, the instructions were all there, and the foundation for the large operations now going on in all parts of the country, was then outlined in this little book.

The valuable publications of the Hatch Experiment station, at Amherst, and the equally valuable publications of this Horticultural Society, together with many others that might be mentioned, present to the gardener of today unlimited sources of information.

Certain locations in our State are noted as leading in special lines of work and invention. Lynn for its shoe manufactures; Lowell for its cotton mills; and so Arlington and Belmont can well be called the leading centre of new and progressive ideas in market gardening. In order to verify this, look at the magnitude of their greenhouses and well tilled gardens. By the use of those immense glass structures, some of them six hundred feet long by fifty feet wide, the field operations are continued, enclosing smaller fields for the winter growth of vegetables.

To such assured success has this attained, that one of the largest growers has said that he was as yet undecided as to which was the cheapest, whether he could not grow the highest quality of vegetables as cheaply under glass as in the open field. This, when understood, may yet come to pass, for at this date a process for cleansing the soil, called sterilizing, is known which will make it possible.

Here again has science come to the aid of the horticulturist and market gardener. The Experiment Stations are entitled to due credit for this already assured success, made so by the larger appliances and conveniences of the scientific market gardener, who has already applied this method in the successful growing of immense quantities of lettuce.

Upon further experience it may be found that by sterilization of the soil, perhaps the entire list of fungus diseases can be easily controlled or wiped out; also the expensive fumigation of greenhouses may be rendered unnecessary.

Two years' experience has as yet but partially demonstrated its full value to the market gardener; already a patent machine for soil sterilization is on the market, which indicates that it is somewhat beyond the experimental stage. Those who are carefully studying results, are already able to say that they think this discovery one of the best and most valuable of recent date.

A process of sun sterilization may yet cheapen and simplify this valuable discovery. From the management and care of the old time hotbeds of twenty-five or thirty years ago, consisting of only a few three by six foot hotbed sashes in many of the best market gardens, has sprung the care and management of the immense greenhouses now so successfully worked, just as from the old time cobbler's shops at Lynn, have come the great shoe manufactories, and the care and management of all their fine and complicated machinery.

It is nothing strange now to find the products of Massachusetts greenhouses on the banquet tables of Chicago and all the other leading cities of the United States.

Cucumbers, once considered so difficult to grow in winter, and as yet so expensive, are now produced at all seasons, and the markets are kept well supplied throughout the winter. In growing this crop, staminating the blossom, which is done by the bees in spring and summer and considered absolutely necessary for success, can now be done by artificial means. Twenty-five years ago only a limited knowledge was had as to its requirements. This applies to nearly all the garden fruits and vegetables, and is fairly understood at the present time.

The Boston Market Gardeners' Association, of which I am

pleased to be a member, was organized in 1886, and was the first in that line in the United States. W. W. Rawson, who was elected its first President, is still holding that position, and has shown himself one of the most able, advanced, and progressive market gardeners engaged in the business. The benefit resulting from this organization, now of fourteen years standing, is of much importance. Valuable lectures are given by the best professional ability from the various agricultural colleges; also papers are read by the different members, treating on special crops in the cultivation of which they might well be classed as experts, the presentation and reading of which before one of the most experienced and enlightened bodies of men engaged both in agriculture and horticulture in the United States, creates discussions of value to members and all those present. Its members are largely members of this Horticultural Society, and are working mutually for the benefit of both.

Other States are now copying them, and similar associations will result throughout the country in or near the large business centres.

While the business of market gardening is not what it once was, neither is any other business; still it may be said that there are but few lines of business contending now with the competition from outside and which did not exist twenty-five years ago. California, the great West, and the sunny South, are now getting the cream of prices by their early, and with us, unseasonable, productions, now that transportation is so cheap over the great lines both by land and water, daily and weekly connecting distant sections of this great country, constantly supplying their best fruits and vegetables to our market. All this tends to discourage many, and only the courageous capitalist, who can afford to purchase modern appliances, is now making any profit.

Market gardening has laid the foundation of many a fortune in years past, and a good living and a comfortable country home still await those who will fulfill its hard and exacting requirements, and who wish to till the soil.

There can be no question that there has been great improvement in the modern appliances for irrigation of the field crops and the greenhouse, requiring the expenditure and outlay of large

sums of money; also in the use of insecticides and poisons for the spraying of fruits of the orchards and field and garden crops, producing results in quality as well as in quantity which without them could not be obtained.

The proper use and value of the commercial fertilizer for farm and market garden crops is now well and carefully studied, and the guesswork of twenty-five years ago as to their application is no longer needed by the intelligent farmer or market gardener, and he is able to place a more just value on stable manure, that always reliable and best of all fertilizers.

But all these advancements have brought their burdens also, in the shape of increased taxes. The near-by market gardeners are now suffering from burdensome and often unjust taxation. Situated within the rapidly growing towns, and near large cities, they are compelled to carry their proportionate part of the expensive improvements in the central portions of those towns, often receiving but little or no direct benefit therefrom.

The solution of this problem can only be found in the gradual absorption and cutting up into house lots, of those farms, thereby compelling those continuing in this line of business, to move back where lands are to be had cheaper, and where therefore taxation is lower. It is the opinion now of many, that this condition should be adjusted, even by legislation if necessary, so as to give encouragement to those who are continuously doing so much for the advancement of agriculture.

That New England has led and will still continue to lead in all the new lines in agricultural development, in improved methods in market gardening and horticulture, is now plainly evident. This year, 1901, the first of the new century, Boston, ever progressive, still in the lead, will open to the public her new and grand Horticultural Hall, the finest in this country if not in the world, where the coming generations can continue the famous exhibitions which have been given here in this old hall, with all its pleasant associations in the past, and which have given pleasure as well as instruction to thousands; where the work of exhibiting the productions of the market gardener as well as the choice and equally skillful work of the horticulturist, having ample room each and all for the exhibition of every kind, can still go on—Boston, the home

of education, with always new and advancing ideas, her best men continuously studying out, always for the greatest public good, not alone in her grand buildings for State Capitol and Municipal uses, but also for Music and the Drama, as well as Horticulture.

Quincy Market, the grand conception of the elder Mayor Quincy, built under his direction and providing standing room for the farmers' produce wagons on South Market Street, was once the best market in any city in the United States. But the Quincy and Faneuil Hall Markets, once ample, are now fast becoming insufficient, owing to the very rapid increase of population and business, requiring for both buildings and surroundings a much larger area than is now within the market limits.

Boston ought to do something for those worthy tillers of the soil, who do so much in constantly supplying fresh and healthy produce for its inhabitants. Quincy Market should be extended to Atlantic Avenue, and a covered shelter stand should be provided for the market gardener and farmer; such an enlargement would do credit to the City of Boston, which should retain full control and ownership of the whole. The contemplated cutting of a street through Quincy Market, thus lessening the farmer's limited privileges on South Market Street, should not be allowed.

Why should Boston overlook and neglect her Market, always in the past considered of so much importance? That the advancement of market gardening may be encouraged within this grand old Commonwealth of Massachusetts, is the hope and desire of those engaged in this most worthy occupation, that they may do their State credit in the future as they have done in the past.

In our day the people of wealth who daily go in their carriages to Quincy Market to order their table supplies of fruits and vegetables, the man of moderate means, and the poor man who takes his basket to the market, can all buy, according to their means, the luxuries of the season as well as the necessaries of life, there so temptingly displayed; and all this is the handiwork of the market gardener and modern farmer. Full credit should be awarded to them for the bountiful table which the poor man can so cheaply furnish at the present day.

The taste for many kinds of vegetables, when first introduced

into our markets, is largely an acquired taste, so that their growing is unprofitable to the market gardener, and therefore the production for many years, remains limited until the daily demand increases and a good market is secured.

The Tomato, for instance, required years before it found its place as a popular vegetable for general use, while today tons of this excellent and healthful vegetable are sold in every market throughout the country.

The abundant production and large market supply in its season of the appetizing Celery, once so limited in supply in our market that only the wealthy could afford to purchase, bring it within the reach of all, and this excellent table vegetable can now be purchased cheaply everywhere and may be well called a boon to the city dwellers and to humanity.

The abundant supply of Asparagus also, in its season, supplemented by early supplies from the South, can be appreciated and is by those who know its value as a food as well as for its medicinal properties.

The early spring market once so profitable to the skilled Boston market gardener, now no longer exists, except for those gardeners who, with their greenhouse and hotbed products, can compete with the South. The Southern and California fruits and vegetables are now supplied to our markets in overflowing quantities, and hereafter the competition from all outside sources will tend still further to diminish the encouragement for local production. However, the climate and favored locations of soil and situation, nearness to market, etc., will always remain factors to encourage those wishing to continue in market gardening and fruit growing here in Massachusetts.

Discussion.

Hon. J. J. H. Gregory thought the meeting much indebted to the lecturer for the broad and sensible handling which he had given his subject. About sixty years ago he and his brother sold in his native town, Marblehead, the first tomatoes. They brought, green, three cents a pound. There was then only one kind. At that time the only beet besides the Long Blood was the Turnip Blood; the Bassano was introduced soon afterwards.

There were Tory Beans, Bush Beans, China, then sometimes called the Skunk Beans, and the Sieva or Small Lima. Sweet Corn was hardly known; it was then called French Corn; the first variety introduced was the Darling. It came into use rather slowly. The only carrot was the Long Orange, and the only cucumber the Frame. The only cabbages were the old English Drumhead and the Long Stemmed Savoy. Of potatoes there were the Early Hill and the Long Red. Onions were then for the most part sold in traces; the Strasburg was the yellow variety, and all our other varieties of yellow, of which the Danvers was one, were bred from it. There were only hard yellow peas; the wrinkled sorts were not known. Fairbeard's Champion of England was one of the first and still remains one of our best. The only dandelions seen in the markets were wild ones, dug in the fields. The only melons were soft, yellow, oval "mushmelons." The Crookneck was then about the only squash; the Marrow was introduced by John M. Ives at about the time Mr. Gregory was speaking of. The true original variety is now lost, but if we could find out where they came from we might renew them; probably they were from Brazil. The true Hubbard has no soft shell; they begin ripening near the stem and the shell hardens.

Varnum Frost said that much stress had been laid on modern science, but we get no good squashes now. The barrel boxes which are filled with two or three dozen heads of lettuce are one-half salt hay. He used to pack cauliflowers solid; now eight cauliflowers carry three times their weight in lumber and rubbish, and loads are piled ten feet high that might be carried in a light wagon. Is the quality of vegetables as good as it was fifty years ago? It is nonsense to say that farming cannot be learned by observation.

The lecturer said that market gardeners in Arlington and Belmont had been stuffing their soil so full of manure that the quality of the vegetables raised on it had deteriorated. The quality cannot be expected to be what it was on virgin soil thirty years ago or more. He thought it might be well for a market gardener to lay down one-half of his ground to grass alternately to rejuvenate it.

Joshua C. Stone said that in what had been said by the speakers who preceded him there was not one word of encouragement to

young men to go to farming. A man makes a profit of five thousand dollars a year of receipts over expenses, but he has a hundred thousand dollars invested in his plant, and makes no account of interest. The speaker had been in the business forty years and has four sons, not one of whom would take the farm if he would give it to him. He can grow cucumbers every week in the year, but no man can grow them at a profit to be fit for use before this time. Greenhouses are no profit to any man in connection with a market farm, but a man who gives his whole attention to them might do something. No man can get a living on land worth two thousand dollars an acre.

Warren W. Rawson thought that the lecturer had covered the ground well without going into details. The speaker could go back forty years and could remember when two hundred hotbed sashes was a large number for one market gardener to have. Today two thousand is not a large number for one grower, and this besides several acres of greenhouses. Six dozen heads of lettuce would then go in a barrel box; now two or three dozen will fill it. The speaker is not discouraged at low prices, for the market has greatly extended, and the productions of Boston market gardeners go as far as Chicago and Canada. He had never known a year when cucumbers did not bring twenty dollars per hundred in February, and he has sold them for fifty dollars per hundred. Lettuce has brought two dollars and a half per dozen. The telegraphic advice today was to ship light, for there were large quantities from the south. The speaker thought we can grow vegetables here as cheaply as at the south. Nothing is so important as sterilization of the soil; a machine has been invented for the purpose, and the speaker thought it would rid the soil of insects and save fumigation.

Mr. Rawson thought that sterilization would destroy many insects. Since he practised it he had seen very few green flies.

The lecturer said that in the paper which he had read he had touched on the inducement to the younger generation to engage in market gardening, for there is a living still remaining to the business. It will not produce millionaires, but it has laid the foundation of fortunes, though this was largely from the rise in the value of land; but this applies only to the vicinity of Boston

and other cities. If he had his life to live over again he knew of no position in the community more independent than that of the market gardener.

Mr. Frost said that there is four times the amount invested in market gardening in Arlington that there was forty years ago, but it does not put so much money into the farmers' pockets. Any man can bring up a family and lay up two thousand dollars a year if his father leaves him a hundred thousand dollars.

The lecturer said that thirty-five or forty years ago, in war times, the market gardeners' wagons were met at the ferry by the market men with the cry, "Sell it to me, sell it to me!" and the gardener made his own prices. Then was the time when the farmer had a large bank account and paid off his mortgage. Prices were almost fabulous: tomatoes brought two dollars per bushel by the wagon load, and all other farm produce brought proportionate prices.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, February 23, 1901.

A Meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

A QUARTER CENTURY'S EVOLUTION IN AMERICAN HORTICULTURE.

By PATRICK O'MARA, New York, N. Y.

The phenomenal progress made in horticulture during the past few years may well supply a theme for the essayist, provide food for thought to those engaged in its development and prove an interesting study for those even remotely connected with it. While horticulture generally has made great strides forward, the most pronounced progress has been in floriculture, particularly in the growing of cut flowers to supply the great cities during the winter season. It is in this particular branch of floriculture that American horticulture can justly claim precedence over all others and

although the scope of this paper is not limited to that alone, a review of it will form the principal part. So pronounced is the advance in greenhouse construction, in methods of growing, in business methods, in the varieties of roses, carnations, chrysanthemums, geraniums, cannas, and other flowering plants, that the progress made may well be termed evolution. Coincident with the advance made in growing, and equally pronounced, is the great change in the retail stores; in fact much of the change in the growing must be credited to the enterprise of the retailer. This is somewhat debatable ground but it is not vitally important; the great point is that progress has been of a necessity coincident.

My first actual contact with the great New York cut flower market took place in the winter of 1874–'75, when I was sent as an assistant to my elder brother to carry an extra basket, occasionally, in his wake, and sometimes go off on an independent route to sell. It seems incredible, in these days, that one man carrying flowers in a basket, with a boy to help on very busy days, and the use of a horse and wagon at Christmas and New Year's, would dispose of about $35,000.00 worth of flowers annually, but such is the fact. The horse and wagon at the times mentioned were necessary largely because of the increased bulk of Poinsettia, which was a "pièce de résistance" in those days, and which, by the way, is just coming back into fashion again. A large basket, such as was in general use to carry cut flowers then would hold an amazing lot of flowers and the prices were gilt edged, $20.00 to $25.00 per hundred for Le Pactole, Lamarque, Safrano, Isabella Sprunt and Bon Silène roses, and even $30.00 per hundred for Douglas. Small roses like these, cut with stems about a foot long in the extreme, did not take up much room; carnations picked short and a few perhaps on stems about six inches long; double white Primula picked short; *Stevia compacta*, Bouvardias, Abutilons, bunches of Heliotrope, *Chorizema varium*, *Lilium candidum*, *Euphorbia Jacquiniæflora*, Tuberoses, Lily of the Valley, Eupatorium, Allamanda, Begonias, Dutch bulb stock, *Jasminum grandiflorum*, Callas, Violets, Sweet Alyssum, Mignonette, *Clerodendron Balfouri*, *Eucharis Amazonica*, leaves of *Cissus discolor*, Smilax, leaves of Pelargonium Madame Pollock, Rose Geranium leaves, fern fronds — anything and everything in the

shape of flowers and foliage could be sold in the early part of the last quarter century. It required considerable diplomacy and tact on the part of the seller during the busy season to steer clear of the too prying buyer in the stores. The various flowers would be done up in separate packages, some reserved for particular customers. The camellia was still in the market when I first began, but was rapidly passing away and shortly after disappeared absolutely. It is interesting to note that camellias were very much in evidence among the flowers used at the funeral of the late Queen of England and that there is every evidence of a revival in them. Thus do fashions change, and the favorite of today may be the despised outcast of tomorrow. The double white Primula was a staple at the time of which I speak and was largely used in funeral designs. We grew a house of it one hundred feet long and found it very profitable. Tuberoses were a staple, too, and one of the best paying crops. We would realize a thousand dollars and over from a house one hundred feet long and ten feet wide, besides raising a spring crop of bedding plants on the same space. In these days of fifty cents per square foot per annum, the wonder is that more florists did not get rich in those halcyon days. One of the local florists on Jersey City Heights made a specialty of tuberoses and amassed a competence from it while the "boom" lasted. These were still the days of the stiff table design, flat basket, hand bouquets made with flowers wired on broom corn, little boutonnières made up with a green leaf for a background and anything handy. Orchids, with the exception of *Cypripedium insigne*, *Dendrobium nobile*, *Bletia Tankervillece* (or *Phaius grandifolius*), *Peristeria elata* and Zygopetalum were practically unknown, and only a few of these found their way to market, mainly from private collections. The glorious Cattleya had not yet made its appearance. There is a well authenticated story of its first appearance in a Broadway, New York, flower store. A noted beau who called in every morning for his boutonnière was always looking for something new. The proprietor had obtained a Cattleya flower and had it safely stored in the ice box awaiting his appearance. He came. Reverently the flower was placed in his buttonhole; silently he was turned toward the mirror. There was an air of mystery, the play of an artist, about the whole performance and

then, the climax, $25.00 for the flower, which was paid with alacrity. It is further stated that for many days thereafter the same gentleman called regularly as usual for his orchid, but the price had dropped to $15.00. No wonder that some of our millionaires decided to go into the business of raising them. It is difficult to get statistics on cut flowers which are reliable, but from the best information obtainable I feel safe in saying that the value of orchid flowers sold annually in the New York market for several years past will not fall short of $100,000.00. This is only one of the many features in the evolution of floriculture.

It was about 1875 that the first decided ground swell in the coming evolution in floriculture was felt, and although it did not manifest itself forcibly for several years thereafter yet it is comparatively easy to trace at this time. All eyes were being turned toward the rose. The varieties then being grown were far from satisfactory; larger flowers and a better grade were demanded, and the supply was forthcoming. Better greenhouse structures were needed and these too were soon supplied. Madison, N. J., began to assert itself. The growers there began sending in Cornelia Cook, and a great revelation it was! Gen. Jacqueminot was artificially rested and forced into flower, the buds bringing from $1.00 to $2.00 each. William Francis Bennett and Pierre Guillot were tried in an effort to provide the desired red rose in winter and failed. Duchess of Edinburgh received a limited trial, but was found wanting. Souvenir de Wootton made its appearance and held its own until the growers got to understand the needs of Meteor, which has since held the field until challenged by Liberty, to which it has not yet relinquished it. Souvenir d'un Ami held place for a time, under an alias at first, but was unable to hold its place against the grand Catherine Mermet, and the day came when her fair daughter, Bridesmaid, drove the parent from the market. The Bride, another daughter of Mermet, quickly drove Cornelia Cook and Niphetos into obscurity. Perle des Jardins eclipsed Maréchal Neil, and Sunset, daughter of Perle, had her day only to retire into obscurity even before the parent. About 1885 the great forcing rose of that and the present day was ushered in as American Beauty, a seedling it was alleged discovered in the gardens of Hon. George Bancroft at Washington, D. C. A

very pretty story, and true as far as the introducer knew at the time, but since identified as Mme. Ferdinand Jamain, introduced by Lédéchaux ten years before. This grand rose has surpassed the most sanguine predictions of the prophets, and up to the present time is without a rival. One daughter, — American Belle — has passed to the "great beyond," but another and fairer daughter has made her debut, viz.: Queen of Edgely: whether she can move in the same orbit has yet to be determined. Mme. Hoste, Mme. Cusin, Mrs. J. Pierpont Morgan, Mrs. W. C. Whitney, Belle Siebrecht, Mme. Caroline Testout, La France, Souvenir du President Carnot, each have had their day; some of them are having it still, but a comparatively small day it is. Kaiserin Augusta Victoria is one of the varieties which has come to stay. Papa Gontier, from which Mr. John Henderson reaped a goodly harvest, has gone too. Golden Gate, for a long time in undeserved obscurity, has emerged into the effulgence of what seems a passing day. Mme. de Watteville, Mme. Pierre Guillot, Mme. Capucine, Duchess of Albany, Puritan, and Waban, from which much was expected, file past in our memories; some are fair ghosts of vanished expectations. I beg to digress for a moment to observe that I have not attempted any exact chronology in the appearance of these varieties; deeming it needless. It appears worthy of note here that as a rule the varieties most loudly heralded when they first made their appearance have not held the field with those which modestly entered the arena. The reaction from over-praise, or the result of over-propagation may be the cause. The demand for larger roses already mentioned resulted in the forcing of Hybrid Remontants besides the Gen. Jacqueminot, and for a while we had quantities of Ulrich Brunner, Mrs. John Laing, Baroness Rothschild, Rodocanachi and others. One New York grower for several years sent in Heinrich Schultheis under an alias with profit to himself. Anna de Diesbach held sway for a time as Gloire de Paris. The old adage that "there are tricks in every trade but ours" holds good even with horticulturists. It is somewhat remarkable that, of all the varieties of roses tried for forcing, the great trio remaining are distinctly American, — The Bride, Bridesmaid, and American Beauty. We should not be asked to relinquish all claim to the latter; at all events it was discovered

here. As Columbus could not create a continent he did the next best thing,—discovered one. At this date it would seem useless to set up the claim that it might have been a seedling after all; certain it is that nowhere under the sun are such American Beauty roses produced as in this country. The Dinsmore rose was a seedling beyond all question, raised by Wainwright of Trenton, N. J., yet it is practically identical with Madame Charles Wood. The Trask Grape is identical with Brighton, yet both were seedlings raised hundreds of miles apart; the former was raised first and never got upon the market, while the latter was introduced and brought some deserved fame to its raiser.

Next in importance to the rose as a cut flower comes the carnation. The development in this has been even more marvellous than in the rose. Statistics in cut flowers, as before observed, are very unreliable. Mr. John Thorpe, at the first meeting of the Society of American Florists in 1885, stated that the number of roses then produced for cut flowers in the United States was 24,000,000 and of carnations 120,000,000, to which should be added 6,000,000 roses and 30,000,000 carnations grown in private greenhouses; these, of course, were actually competing with the commercial output. Miss Emily Louise Taplin made a similar statement in 1886, probably borrowed from Mr. Thorpe. Professor Galloway in the "Year Book of the Department of Agriculture" for 1899 estimated the number of flowers sold as follows; roses, 100,000,000, carnations, 100,000,000, to which add 25 per cent for the quantity grown in private places. Here is a wide discrepancy and it is introduced here merely to show that it is such. Probably a figure midway between the two would be nearer the truth. Miss Taplin, in the statement above referred to, estimated that the total glass area in the United States was 3,200,000 square feet, an estimate out of all proportion to the alleged product. Professor Galloway in 1899 estimates the amount at 24,500,000 square feet, averaging 2,500 square feet to each florist. I think this average could be reasonably increased to 3,000 square feet, to include cold frames and hotbeds, which would bring the total up to 30,000,000 square feet in commercial use for the production of flowers and flowering plants, some portion no doubt being used for vegetables. Add to this the vast

amount of glass used by market gardeners and private gardeners, at least 50 per cent of the foregoing area, and we have a fairly accurate idea of the importance of horticulture at the present day in the United States.

But to return to the carnation. The growing demand for the flowers, the evident need for a better grade, and the apparent necessity of "booming" the flower were causes that led to the formation of the American Carnation Society in 1891. This organization has been wonderfully successful along its chosen lines, and the aims originally outlined are being realized each year. The much quoted "Thorpe's Ideal" carnation, viz.: one four inches in diameter on a two foot stem, is not so far away. The development of the carnation in this country is distinctively American. The varieties in use have been raised here, the methods of culture have been perfected here. From Hinsdale to Prosperity; from Portia to America, G. H. Crane, and Adonis; from President De Graw to Lizzie McGowan, Flora Hill, Alaska, White Cloud and Norway; from La Purité to Tidal Wave, William Scott, and Mrs. Thomas W. Lawson; from Miss Joliffe to Daybreak; from Charmer to Mrs. George M. Bradt and Olympia; from Astoria to Buttercup and Gold Nugget; from Rosy Morn to The Marquis and Genevieve Lord; from Crimson King to Gen. Maceo, Gen. Gomez, Egypt and Gov. Roosevelt — these indicate the giant strides made but tell little of the patient, intelligent efforts of the hybridizers. It is a record of which American horticulturists may well feel proud.

The violet, that other important member of the cut flower family, has grown in importance with the others. Its history does not contain as much of interest as does that of the rose or carnation. New double varieties (alleged) have been introduced but they are after all only strains of Marie Louise. New single varieties have been introduced, much superior to the old Schoenbrunn, but the great demand is for the double ones.

The chrysanthemum, which forms a by-crop in the cut flower market, exhibits one of the most wonderful efforts in American horticulture to develop and popularize a particular flower. To Mr. John Thorpe is due much of the credit for this. The exhibitions in New York, beginning in 1886, those in Philadelphia

and Boston, the importation from Japan of the collection containing Mrs. C. H. Wheeler and other good sorts, the importation in 1888 containing Mrs. Alpheus Hardy and other valuable varieties, (an importation, by the way, which has a romantic story attached to it of gratitude from a Japanese youth to the lady whose name the variety mentioned bears), importations from England and the continent, the rapid production of seedlings of pronounced merit here,— all combined to set afloat on the sea of popular favor the glorious "Queen of Autumn." It is highly creditable to our cultivators that well among the best varieties in the world today are found varieties raised here. The stamp of fashion was set upon the Chrysanthemum and although the fickle jade has somewhat changed in her attitude of late, particularly in the East, yet the impetus given carries it along and will undoubtedly do so for years to come. In hundreds of the smaller cities throughout the country, as well as in the large ones, the annual chrysanthemum show is a settled institution and this year there is to be one in New York on a magnificent scale.

Now let us glance at the evolution in the plant trade. It is divided, let us say, into five sections. The catalogue trade, the rooted carnation cutting trade, which is a branch really of the cut flower trade, the market florist near the large cities, who grows soft-wooded flowering and ornamental foliaged bedding plants for market and cemeteries, the grower of decorative plants, such as palms, for the city retail florist, and the florist in the smaller cities and towns who supplies a local trade almost exclusively. The first mentioned is perhaps the most important and most interesting. It is this branch of the trade which mirrors, and in a sense molds, public sentiment. Ever on the outlook for new plants and improvements in varieties, ever on the *qui vive* to gauge the popular taste correctly, the men engaged in it have to decide what to take up and what to drop; and as the majority decide, so it will be in nine cases out of ten. The catalogue man reaches where no florist or seedsman has yet ventured. The seed box at the the country store cannot; it is inadequate to satisfy the aesthetic sense of those who hunger after the finer grades of flowers and this want the catalogue and its publisher fill. The catalogue is the great vehicle for the distribution of horticultural literature, much

of it being sent gratuitously or as a premium on orders. The advertisements in the great magazines, in the weekly press and in the rural publications supply the inspiration for many to begin gardening who otherwise would never attempt it. The traveler for the catalogue man, particularly in nursery stock, the "home agent," the "club organizer," the local expert who has carried off a prize for the best this or that offered by the catalogue man, these are potent agents in the evolution of American horticulture. They are part of the great machine and although they are railed at by very conservative people, they are essential. It is in the wake of these that the local florist and nurseryman, as well as the seedsman, spring into activity: it is the catalogue which sets the pace for them, and were it suddenly to be withdrawn from circulation, many of those who abuse it would either have to take up the burden or cease business. The development of the catalogue has been wonderful in the extreme. Twenty-five years ago the most ambitious in the country was a book of about one hundred pages, six by nine inches, in a plain cover and sparsely illustrated. That was a tremendous advance over what was published ten years before. Today the leading catalogue has one hundred and ninety-four pages, is a book eight and a half by ten and a half inches, has an illuminated cover, six colored plates, colored photographic scenes, every page is profusely illustrated, and ten copies are distributed for one sent out twenty-five years ago. Although I am unable to say positively how many firms issued catalogues twenty-five years ago yet I think one hundred would cover them. Today there are about three hundred and fifty in the field. In addition to these we must consider the great number of foreign catalogues sent here: the American trade is no mean item to European houses. Owing to the great variety of stock carried by seedsmen, florists, and nurserymen, advertising must take the forms of securing distribution for the catalogue; they are all glad to send it to a bona fide buyer but must discriminate against the catalogue collector. Some still mail it free to applicants. Very ingenious are the plans adopted to secure distribution. The first I believe to advertise a specialty as a vehicle to distribute the catalogue was Peter Henderson with the celebrated Moonflower in 1887. To show the value of special adver-

tising well done there is no better illustration than this. He first offered the plant in his catalogue as *Calonyction grandiflorum* or "Evening Glory" in 1879, the text dilating on its "moonlike" flowers. In 1884 the name Moon Flower was used in the catalogue for the first time; the price was twenty cents each, then and up to 1887. When it was advertised in the magazines the price was fixed at forty cents each, and the demand was phenomenal, about sixty thousand plants being sold as against two thousand the previous year. This experiment showed so forcibly the value of a popular and descriptive name and the use of a specialty that the plan was followed by many thereafter with varying success. The use of the appellation "Ostrich Plume Chrysanthemum" for Mrs. Alpheus Hardy, and of "The Memorial Rose" for *Rosa Wichuraiana* were equally productive of results. In fact the effect of the latter was more far-reaching as it directed attention to the rose in such a manner that the raising of hybrids was stimulated in a great degree. The name of "Wineberry" for *Rubus phoenicolasius* was a palpable hit. But many overshot the mark, and some of the alleged popular names were not descriptive and were meaningless in their application. The Bush Lima Bean was another item which made a splendid specialty to advertise. The offering of a money prize for a suitable name was the natural outgrowth of the first principle, and for a time was a potent agent in attracting customers. All these are interesting as manifestations of the evolution in American horticulture. The catalogue trade in plants, influenced no doubt by the cut flower market, is given up largely now to roses, chrysanthemums, carnations, etc. Twenty-five years ago, there was a larger collection of plants offered than today. This is somewhat to be regretted. The greenhouses on large private places are mainly devoted to growing cut flowers instead of collections of stove and greenhouse plants. For this reason they are not so interesting to visitors, nor even to the owners, and a return to the former vogue would be an improvement.

The period which we are contemplating saw the rise, the climax, and the partial fall of the ornate bed, involved design, and carpet system of outdoor bedding. That it was carried to excess is undeniable. It is questionable taste to show prize fighters and

elephants in ornamental beds of plants. Butterflies could be tolerated; flags are not so bad; but ships that do not sail and railroad trains that never go, can only be regarded as monstrosities in lawn decorations. This school of gardening was vigorously attacked in the house of its friends by William McMillan at the Convention of the Society of American Florists in 1889. The temple of the cult was in Chicago and it is significant that at the World's Fair, in 1893, it was conspicuous by its absence. The pendulum swung too far the other way there, the reaction came; we are promised some ornamental bedding at the Pan-American in Buffalo this year. It will be welcome and will be a sort of poetic justice. My feeble voice was raised against the wholesale denunciation of ornamental bedding at the time and will continue to be raised. To do away with it would be a retrograde movement. The so-called "natural" system is not satisfying by itself, there is room for both in proper degree, for one is the complement of the other.

The grower for the retail stores is really a development of the quarter century. It is wonderful the quantity of palms, ferns, heaths, lilies, azaleas, hydrangeas, cyclamens, primulas, oranges, pandanuses, crotons, dracænas, poinsettias, and other flowering and decorative plants which are grown and sold now compared even with ten years ago. It is the finest development in horticulture. The market florist goes along in the even tenor of his way much as he did twenty-five years ago, only there is more of him. The same may be said of the country florist who grows for a home trade.

Now let us briefly inquire into the causes for the evolution we have been studying and view some of the effects produced thereby. First was the realization that the general florist could not produce first-class flowers; hence the specialist with all the improvements in structures and system. It is needless to go into the history of steam heating, large glass, improved ventilating apparatus, etc. This brought about better business methods; young men brought up in the country, accustomed to its ceaseless business activity, untrammelled by old-fashioned routine, got into the business; the older men were carried along by their example and helped them with their experience. The Society of American

Florists, founded in 1885, brought about a concentration of effort otherwise impracticable, if not impossible. A trade press was established through which intelligence was disseminated. The annual meetings brought men together and ideas were exchanged, rivalry was fostered, ambition received a spur. The florists stood before the country as a body of business men, they entered the legislative halls, they negotiated with transportation companies; in fact, they were metamorphosed as compared with the slow-going, plodding, happy-go-lucky men of a few years before. The great horticultural societies, those of Massachusetts and Pennsylvania, awoke to the growing importance of flowers and florists and increased the schedules of prizes at their exhibitions.. The Department of Agriculture and the State Experiment Stations awoke too and listened to the calls from the florists; science was invoked and instead of the rule of thumb the laws of cause and effect came into play. The retail florist in the city became an artist; he rivalled the drygoods man in window display, he surpassed most of them in shop appointments. He transcended him and every one else in rolling stock. He dropped his first name on his signs and cards and became "The Florist" with a note of exultation in the title. The commission dealer created himself and has grown apace, a shrewd, energetic hail-fellow-well-met for the most part. The grower wrestling with the problem as old as business — From producer to consumer,— has formed his exchange, has become commission man himself and it is all part of the evolution.

Florists' clubs are in all the large cities; emulating their example, gardeners' associations have sprung up, organization is in the air and 'tis well 'tis so when rightfully conducted. We have the Rose Society, and the Dahlia Society, the Florists' Hail Association, the Florists' Protective Association. New plants are officially registered; printed labels are in general use in the shipping trade; we have wire stakes instead of split shingle; the hotels and private residences are bowers of exotic plants; one may order in New York to have flowers delivered in Paris, London, or Berlin; the florist has hitched on to natural gas for fuel; the great millionaires —some of them — have bestowed conservatories and parks on city and village; they have built great

ranges of glass for their own use; the florist is no stranger to cold storage and summer and winter look alike to him. These are a few of the mile stones in a quarter century's progress. In that period we have seen introduced the Bermuda Lily, the Crozy Cannas and their seedlings; we have seen roses propagated during summer and distributed by millions and tens of millions by mail and express; we have seen the home grower successfully compete in budded roses with the foreigner; cheap and good land with energy plus have beaten cheap labor; we have had *Asparagus plumosus* and *A. Sprengerii*; we have had the great Crimson Rambler Rose; we have seen the Bay Trees dot our streets; we have seen great botanic gardens, like the Bronx, brought into being; we have seen the wonderful development of the Arnold Arboretum and the Metropolitan system of parks in Boston; have seen the Back Bay Fens converted from a swamp into a garden; and here I desire to say that in all which tends to the advancement of horticulture along its best and broadest lines, the Massachusetts Horticultural Society has played and is playing a most prominent part. The "Boston" Fern has impressed itself on the horticulture of the day. Begonia Gloire de Lorraine has appeared, and this reminds me of how much we owe to Lemoine, Bruant, and other foreign hybridizers for improved heliotropes, syringas, begonias, fuchsias, pelargoniums (geraniums), chrysanthemums, roses, etc. There are other plants which signalize the quarter century, but I feel that I have named enough to show the progress made. It was my intention to devote some time to the advancement in small fruits but I understand that the subject has been covered by another.

The literature of the day and period must not pass unnoticed. We have the trade press already alluded to, "How to Grow Cut Flowers," an excellent book, Scott's "Manual," full of practical knowledge; we have the new editions of Peter Henderson's earlier works and his "Handbook of Plants." The Violet has been treated in a volume by Galloway, Mushrooms in another volume by Falconer, Sweet Peas have been treated by Hutchins, Dahlias by Peacock, Chrysanthemums by Morton, Barker, and others, Greenhouse Construction by Taft, besides other literature on horticulture. We are now receiving that comprehensive work

"The Cyclopedia of American Horticulture" by Bailey, to whom we are indebted for so much already. The Experiment Stations have sent out numerous reports on various matters so that the literature of horticulture has kept pace with its practical development. The only regret is that the amateur horticultural journals do not seem to attain the circulation and importance which should be theirs under such general prosperous conditions, but that will come in due time.

It only remains to observe in closing that the quarter century recently finished, and which rounded out the greatest century in material progress which the inhabitants of this planet had ever passed to their credit, is shown, I trust, to be a period rich in achievement for the horticulturist, particularly full of advanced progress, of concrete thought, of practical development for the floriculturist. The utilitarian branches have also advanced; but their greatest progress may well be credited to the preceding quarter century. The æsthetic branch, building on the others, as the airy minarets and graceful arches spring from and rest upon solid foundations and well buttressed walls, has grown full and fair and may well be taken as the fairest gauge of the nation's advancement along the lines of a higher civilization. As we stand on the threshold of a new century full of hopes and aspirations for still greater achievements, it is perhaps well that we should thus pause for a brief period, to beat time as it were in the march of progress, to take a breathing spell, to scan the achievements of the recent past and thereby perchance acquire new vigor for the work before us, or mayhap derive inspiration as we contemplate the great work done in this day and generation. While the commercial florist and horticulturist, as well as the private gardener, are justly entitled to their meed of praise for the part they played in the general advancement, too much cannot be said in laudation of the work of the men connected with the various Experiment Stations. A writer in the Agricultural Epitomist has aptly said: "In this utilitarian age, we are prone to measure success by dollars accumulated, by achievements upon battle fields, or in other tangible spheres, forgetting that back of the most worthy achievements there is science, and that science was likely discovered by some one who loved truth and his fellow man more than he loved himself

or money. The great army that is delving into the rocks, peering into the sea, reading the heavens, studying the plant, the fowl, the insect, conquering the elements and training them into subserviency to man, translating the language of nature, and flooding darkness with light, is unremunerated except by the satisfaction which the knowledge gives, and the world reaps the benefit."

Discussion.

Jackson T. Dawson said that the lecturer had only reiterated what every one present had seen of the beginning and progress of the traffic in flowers. In 1861 or '62 Hovey & Co. took their flowers to market in a basket. Smith of Cambridge did the same; he used to come to Hovey's nurseries and buy what he had not got. Crosses and other emblems were made in frames of willow or cut out of shingles. Not more than three hundred carnations were grown by any one. Lamarque was the favorite rose. New Holland plants were largely grown. Verbenas, which were then largely grown, have now gone out. *Epacris paludosa*, which has also gone out, ought to be revived. The number of greenhouses then could be counted on your fingers. A drug store on the opposite side of Tremont Street, was one of the largest places for the sale of floral decorations.

E. O. Orpet enquired as to the origin of the carnation Prosperity.

The lecturer replied that he could not give the parentage. It is not equal to Mrs. Thomas Lawson. Growers get them from three and one-half to three and three-quarters inches in diameter.

Thomas Harrison doubted the advantage of such extremely large flowers.

The lecturer thought we could not have too much of a good thing. Carnations will never be put with cauliflowers. We cannot get so many large ones as of smaller sizes. Growers like to get large flowers.

Willlam C. Strong said that he is now out of the line, but he had listened with exceeding pleasure to the lecturer. His last experience was with *Asparagus plumosus*.

William H. Elliott said there was once a great rage for dahlias; afterwards they went out and were scarcely seen. Now they are coming into fashion again.

The speaker moved a vote of thanks to Mr. O'Mara for his very excellent address, which motion was carried unanimously.

Mr. Orpet enquired of the lecturer what he esteemed the best decorative plant.

Mr. O'Mara replied that the question was a poser, but on the whole he should say Kentia.

He spoke of the development of floriculture at Natick as a revelation in its way, and perhaps the best organization.

At Chicago you can see from the top of the water tower a million square feet of glass devoted to the growth of flowers. The owners were originally market gardeners. At Hinsdale one man, not a florist but a business man, has six hundred and fifty thousand square feet of glass, on the ridge and furrow system.

Edmund M. Wood spoke of the environment of greenhouses. As ordinarily spaced in a house twenty feet wide, the first bed will produce forty per cent more than the second; the first bed shades the other. Ridge and furrow roofs shade one another; if the houses are twenty feet apart they do not.

In development we owe much to disbudding roses; the same treatment was afterwards applied to chrysanthemums. The florists said it would ruin their business, but it proved their salvation.

Mr. Harrison asked whether carnations require any particular soil. Those from other places are of little value when they get here.

The lecturer replied that he was not a carnation specialist, but they require a friable soil well enriched. Formerly it was believed that there was a "carnation belt," where they would succeed much better than outside of it; now it is known that they can be grown anywhere. Once it was thought that they could not be grown at an elevation of more than two thousand feet, but at Denver, at an elevation of six thousand feet, where they have three hundred sunny days out of three hundred and sixty-five, they grow better than at the seashore.

BUSINESS MEETING.

SATURDAY, March 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

Ex-President William C. Strong reported that the Boston Co-operative Flower Growers' Association thanked the Society for the offer of one of its Halls for the Annual Carnation Show of the Association, but deemed it best to hold the exhibition in their own room.

The Secretary read a letter from Charles E. Cotting, presenting to the Society, in behalf of the Trustees of the Paddock Building, agreeably to the wish expressed by the Society, the two marble tablets in the staircase hall of the present Horticultural Building. It was voted that the thanks of the Society be presented to the givers for this kind act.

The Committee on Publication were authorized to print the Treasurer's Report as soon as it shall have been approved by the Finance Committee.

It was voted that the Building Committee be instructed to take charge of the removal of the statutes on the building, and the tablets in the staircase hall, before the expiration of the Society's lease of the Building, and report their action to the Society.

It was voted that the Library Committee be authorized to remove the library and library furniture to the new building, and that the Superintendent of the Building have charge of the removal of all other property of the Society.

It was voted that when any report deemed too long to be read in full is presented by either of the Standing Committees of the Society, the Chairman be requested to make a condensed statement of the salient points.

The decease of Edwin C. Lewis was announced, and Warren Howard Heustis, Patrick Norton and Joseph H. Woodford were appointed a Committee to prepare memorial resolutions.

The decease of Augustus Parker was announced by Ex-President William H. Spooner and it was voted that a Committee of three be appointed by the Chair to prepare a memorial of him. The Chair said that he would announce the Committee at the next meeting.

The Secretary announced the decease, on the 5th of December, 1900, of H. W. S. Cleveland of Chicago, Ill., and said that as a landscape gardener he was one of the foremost men in the country. He was associated with Robert Morris Copeland, and afterwards, at Prospect Park, Brooklyn, N. Y., with Frederick Law Olmsted. He had charge of many important works, among them being parks in Providence, R. I., Chicago, Ill., Brunswick, Ga., St. Paul and Minneapolis, Minn., Omaha, Neb., Sleepy Hollow Cemetery, Concord, Mass., and the grounds about the Natural Bridge, Va. His book on "Landscape Architecture as applied to the wants of the West" and several addresses on parks and kindred subjects were presented by him to our Library. At one time he engaged in the culture of fruit at Burlington, N. J., and was for twelve years Corresponding Secretary of the New Jersey Horticultural Society. During this period he attended the first meeting of the American Pomological Society. He was elected an Honorary Member of this Society in 1848.

It was voted that the Secretary express to the family of Mr. Cleveland the esteem and respect in which he was held, and that the same action be taken in regard to Mr. John Galvin, who died on the 24th of February.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were upon ballot duly elected:

Mrs. Charles T. White, of Boston,
Harry E. Fiske, of Wollaston,
Charles A. Stone, of Newton.

The meeting was then dissolved.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 9, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

FRUIT GROWING IN NEW ENGLAND AND ITS DEVELOPMENT DURING THE LAST FIFTY YEARS.

By HON. AARON LOW, Hingham.

If we go back fifty years we find that the culture of the various kinds of fruit adapted to our New England climate was in small amount as compared with the great importance in our productive industries that it holds at the present time. Then there was but a very small amount of grafted fruit, of the varieties which now are in great demand, and which are produced in immense quantities.

APPLES.

The apples then were produced mostly from orchards of natural fruit, as but few of our first-class apples of the present time were much disseminated then; in fact many were not then known.

There is no doubt that the apple stands first in commercial importance as being more largely cultivated than any other species of fruit. Scarcely a farm can be found in New England but has its apple orchards; and the products have ever been considered as the most profitable of the farm. Within fifty years there have been many new varieties of apples introduced, so that now in setting out an orchard we have a much larger number of choice varieties to select from than formerly.

There is no other variety as largely cultivated in New England as the *Baldwin*. It is well adapted to our climate, as it was originated in Massachusetts; is of strong, vigorous growth, an immense bearer of large, handsome red apples, and stands ahead of every other variety as a salable winter apple. The quality is first class for eating or cooking. I think there are more trees of this apple set out than of all others in New England.

Another first class apple well adapted to our climate is the *Rhode Island Greening*. This is a large green apple of excellent quality. Tree of strong vigorous growth, producing large crops of fine handsome fruit, fine grained, and of rich acid flavor. This I think stands next to the Baldwin as a profitable variety for orchard culture.

As one of the best winter keepers the *Roxbury Russet* is valued very highly. Twenty-five years ago this was much more profitable to grow than it is at present. Within a few years it has developed a tendency to mildew the fruit, and the apples do not grow as large and fair as formerly. Under present conditions it is not advisable to set out many trees of this variety.

The *Porter* and *Hubbardston Nonsuch* years ago were two of our best and most profitable fall apples, but for a number of years past a small worm has done a great deal of damage to the fruit of these two varieties as well as most varieties of sweet apples. It is called the Apple Maggot. Its method is to tunnel through the pulp of the apple in winding channels, thus rendering it worthless.

Without doubt the most destructive insect to our fruit is the Codlin Moth. According to Professor Slingerland the damage caused to the fruit crop by this insect alone amounts to many millions of dollars yearly. In 1892 this insect is said to have caused a loss of $2,000,000 to the apple growers in the single state of Nebraska. In the state of New York it is estimated that the damage to the apple crop yearly is $2,500,000, and the damage to other fruit enough to bring the total loss up to $3,000,000, or, in other words, the fruit growers of New York furnished this amount yearly to feed this destructive little insect.

The rapid multiplication of destructive insects has made it a necessity to the fruit grower to adopt such means as are most effective in checking their injuries to the fruit in the first stages of its growth, or immediately after the fall of the blossom. There is no more effective method that we can employ than to spray our fruit with the various insecticides as per the formulas of our Experiment Stations.

As an early variety, the *Williams* ranks very high. It originated in Roxbury. On rich strong land and given high cultivation

this is always a first class apple. Of good size, bright, handsome red color, mild and agreeable flavor, this is one of the most salable apples known, and usually brings large profits.

Red Astrachan is one of the earliest varieties. This is a very handsome apple, brilliant crimson color with a thick bloom, flesh acid, and of marked excellence in cooking. Tree a strong vigorous grower, and very productive. Fruit should be picked a few days before it is ripe, as it does not keep well if allowed to become fully ripe on the tree.

Duchess of Oldenbury. This apple is of Russian origin. Large, very handsome, streaked with red and yellow. Flesh yellowish white, sub-acid, excellent for cooking. Tree very hardy, a strong grower, an early and abundant bearer.

One of the most desirable of our fall apples is that superb variety, the *Gravenstein*. This is a large, handsome, striped apple, of the highest flavor and quality, and usually commands the highest prices. On strong, rich land it is one of the most profitable apples grown.

Many people prize a good sweet apple very highly. There is no better variety as an early sweeting than *Sweet Bough*. Fruit large, greenish yellow, very tender and sweet.

As a later sweeting for use from November to March, the *Jacob's Sweet* is a first class apple. Large to very large, yellow, splashed with red. Excellent to eat or bake.

King of Tompkins County is one of our largest and most showy red apples. Tree a strong grower and a good bearer. Fruit deep red; flesh tender, juicy and high flavored. Keeps through the winter. One of the best.

Fameuse or *Snow Apple*. This variety when well grown is one of the handsomest apples known, and usually sells at high prices. Of late years it has been inclined to mildew and this detracts from its value. Medium in size, deep red on a whitish ground; flesh very white, juicy, with an exceedingly pleasant spicy flavor.

Golden Russet. This is an old variety, but of such rich, spicy flavor that it is a universal favorite. Fruit medium size; skin of a decided yellow russet color, flesh tender, juicy and rich. Tree a vigorous grower and very productive.

There have been within a few years past quite a number of new varieties of apples introduced combining many desirable qualities as first class fruit, and originating in our own country. As one of the most promising of these new varieties *Sutton Beauty* ranks high. This is a good sized, handsome, reddish apple, of first class quality for the table or for cooking. Tree an exceptionally fine grower and of handsome shape; foliage bright, glossy green, and always healthy. A regular bearer of choice apples of fine quality.

McIntosh Red. This originated in Canada and is an exceedingly valuable kind. The fruit is dark red; flesh white, tender, juicy and of rich flavor. A regular bearer, resembling the Snow apple but of larger size and more hardy and not subject to mildew. It is a very desirable variety for orchard culture.

Wealthy. This apple originated in Minnesota. The tree seems to be perfectly hardy, and has given excellent satisfaction whenever it has been fruited. The fruit is of medium size, bright red streaked with white. Flesh white and of fine quality. Tree strong and healthy, one of the best for orchard setting.

Palmer Greening. This variety is not much disseminated but is one of the best in quality. The tree is not a very vigorous grower, and is said to be better when top-worked on strong growing varieties. The fruit is yellowish green, and of a peculiar rich aromatic flavor. A very good keeper and a very promising variety.

Wolf River. Originated in Wisconsin. The fruit is very large and handsome. Specimens of this variety at last fall's fruit exhibitions attracted more attention than any other. Fruit bright red, flesh white and of fine quality.

Pears.

The pear when grown in its full perfection is highly esteemed for its rich, sweet, and delicious flavor. As this is adapted to closer planting than the apple it is usually set in the home garden, as a greater variety of fruit can be had. Some of the best varieties of pears seem to do better when set as dwarfs grafted on the quince; in that case the trees can be set from ten to twelve feet apart. My experience has been that far better specimens can be grown on dwarfs than on the standard trees.

Angouleme, Louise Bonne of Jersey, Anjou, Vicar and Clairgeau are varieties much improved in the quality of the fruit when grown as dwarfs. Of the varieties more commonly grown Bartlett, Bosc, Sheldon, Seckel, Winter Nelis, Clapp's Favorite and Lawrence do best as standards.

As a variety adapted to almost all localities the *Bartlett* stands first. Fruit of large size, clear yellow, flesh fine grained, exceedingly tender and buttery and rich flavored. Tree a good grower, comes into bearing young, and is very productive.

Clapp's Favorite as a summer pear is a very fine variety when picked before fully ripe. Fruit of good size; flesh melting, juicy and sweet but sometimes inclined to rot at the core. Tree vigorous and healthy.

When we consider the highest standard of quality in richness and flavor the little *Seckel* stands at the front. Although it is one of the smallest pears we have, from its exceeding sweetness and unequaled rich flavor no collection is complete without it.

Dana's Hovey. This is also a small pear, but from its rich and delicious flavor is very highly esteemed. The tree is a very handsome grower and is very productive; fruit keeps till winter.

As one of the largest pears of high quality grown, the *Angouleme* will give as good returns to the grower as any, especially when grown on dwarfs. The fruit is very large, of fine appearance, always commanding a ready sale.

Louise Bonne of Jersey is another variety that does best on quince. This is a large sized, longish pear, greenish in color with reddish shading on the sunny side. Flesh very juicy and melting with pleasant sub-acid flavor. Tree a good grower and productive. This variety when well grown is very profitable.

Anjou. This pear, introduced many years ago by that veteran pomologist, Hon. Marshall P. Wilder, is one of the most valuable grown. Its reliability, uniform good quality, and long keeping, render it one of the most profitable varieties in cultivation. Fruit large, fine grained, with a rich vinous flavor. It does exceedingly well on the quince.

Clairgeau. This is one of the largest and handsomest pears in cultivation, also one of the best to grow on the quince. The fruit is yellow and red, and although not of the best quality is, from its

large size and handsome appearance, very salable. Tree a good strong grower and an early and abundant bearer. A valuable variety.

Lawrence. One of our best winter varieties. Fruit medium in size; flesh buttery, juicy and very sweet. Tree a moderate grower, but very productive.

Bosc. Truly a magnificent pear. There is no other pear combining as many first class qualities as this. The fruit is large, always perfect, and of the highest flavor, is distinct in form, of a deep yellow russet color. The flesh is white, juicy, with a rich delicious perfume. It sets its fruit singly scattered over the tree, as if it had been thinned, thus producing fine handsome pears. The tree is a good bearer but not a vigorous grower and does better when top worked on such strong growing varieties as Keiffer and Vicar.

Vermont Beauty. This is a handsome, medium sized, yellow pear with a bright carmine cheek. The flesh is rich, juicy, and aromatic, resembling the Seckel, which variety it immediately follows in ripening.

Worden-Seckel. This is a new variety, originated in New York. Fruit of medium size, flesh fine grained, juicy, and of excellent quality. Very promising.

Hardy. This is a large russet pear. Tree a strong grower and abundant bearer of handsome smooth fruit, with rich, slightly sub-acid flavor. It ripens in October. Very desirable.

Boussock. A large roundish pear, yellow when ripe, with a slight reddish cheek. Tree a vigorous grower and good bearer. Ripens the middle of September. A valuable and reliable pear.

Plums.

The cultivation of the plum has largely increased within the last ten years. The old varieties became so subject to the disease of the black-knot, that the trees soon died and it was almost impossible to raise a full crop of plums.

The introduction of the Japanese varieties created a new interest in growing plums. The trees proved to be not subject to the black-knot, neither were the small plums injured by the curculio nearly as much as the European or American varieties. Since

their introduction the better varieties of the Japanese plums have been largely set out. The trees are well adapted to our soil and climate, and appear to be less subject to disease than the old class of plums. There are quite a number of varieties of Japanese plums much superior to our old American or European kinds in quality of the fruit as well as in the vigor and healthiness of the trees. I will briefly notice some of the better kinds, with the principal points in favor of each.

Abundance. This was one of the first introduced, and is a first class variety in every respect. Tree a strong upright grower, coming into bearing very young. It is extremely productive of large handsome plums, of a bright cherry color with a heavy bloom. Flesh orange yellow and of a sweet, rich, sprightly flavor. Decidedly a great acquisition.

Burbank. With many this is reckoned as the best variety of the Japanese plums. The trees are very strong growers, inclining to spread their branches irregularly and coming into bearing very quickly. It usually sets the fruit very thickly and it is much better to thin the plums out severely, as those left will make much larger and handsomer specimens. The fruit is dark red to bright amber in color, roundish in shape and of good size. Flesh amber yellow, juicy with rich sugary flavor. If you have a place for but a single tree set the Burbank.

Wickson. This variety was originated by Mr. Burbank of California, and was obtained by crossing the Kelsey plum with Burbank, and is considered by him the best of the Japan plums. The tree is an upright, very strong grower. Fruit medium in size, glowing carmine with heavy white bloom. Flesh yellow, spicy, sub-acid, good. I have not fruited this variety as my trees are but two years set, but they are now covered with blossom buds for the next year. This has not been as thoroughly tested as Abundance and Burbank, but those who have fruited it speak very highly of it.

Satsuma. Another Japanese variety, but different from all the others, having a bright red flesh; is much prized for making jellies or preserving.

Hale. This was recently introduced, and although not fully tested is considered very promising. Fruit large, bright orange, mottled with cherry red and of extra fine quality.

Although many of the European and American varieties of plums are subject to the black-knot, still they are such strong, vigorous growers, and so exceedingly productive in fruit, that some of them are well worth risking to set in our plum orchards. When well taken care of, and the black-knot at its first appearance carefully cut out and burned, the trees will give heavy crops of very choice plums.

Bradshaw. This is one of the best; a very large dark purple plum; flesh brownish purple, juicy and of good quality. Tree a strong vigorous grower, setting its fruit well over the tree, and does not need thinning as much as some other kinds. Ripens the last of August.

Lombard. This is a variety of American origin, and taking all of its good points I think stands highest in the entire list of European or American varieties. The tree is a good grower, and immensely productive of plums of good size and very good quality. This variety usually sets its fruit so thick that it should be severely thinned to have the fruit grow to a good size and mature well; besides, the plums are not as liable to rot as when growing thick.

Pond's Seedling. This is of English origin and truly a magnificent variety. The fruit is large, reddish violet in color, juicy, and of fine quality. Tree vigorous in growth and an abundant bearer.

Smith's Orleans. This is a wonderfully productive variety. Fruit large, reddish purple; flesh firm, juicy, with a rich vinous flavor. The trees do well in all soils. An American plum, originated on Long Island.

Lawrence. This is also of American origin. Tree thrifty and productive. Fruit yellowish green with a light bluish bloom. Flesh melting and rich flavored. An excellent variety.

Peaches.

Peaches when well grown are the most delicious of all of our fruits. But as the trees are very tender and with difficulty withstand our changes of climate, success in growing first class fruit is quite uncertain.

One of the most serious troubles in peach culture is the late frosts in the spring. If it is mild and warm in early spring and the peach buds start to grow, and then follow late frosts, the blossoms are often ruined and the crop is lost. The trees should not

be forced to make too large a growth, as a moderate growth ripens better and makes a harder, firmer wood, not as liable to injury from cold.

Among the great number of varieties now cultivated, the more choice kinds should be selected, and if well cared for we may get a good crop of this delicious fruit.

The peach is a rapid growing tree and comes into bearing at an early age. The trees do best on light warm land and should not be fertilized with stable manure, but with wood ashes, bone dust, and nitrate of soda, as this combination gives a more hardy and stouter growth, and a better development of fruit buds.

Among the many choice kinds I will select such as seem best adapted to our locality.

Early Canada. This is one of the very earliest, of good size, fine quality and fine appearance.

Early Crawford. A magnificent large yellow peach of excellent quality. Tree vigorous and productive. One of the best.

Coolidge's Favorite. A large white peach with crimson cheek. Flesh juicy, sweet and of rich flavor. Ripens about the middle of August. Very desirable.

Crosby. This is said to be the hardiest of all peaches to withstand our cold winters. Fruit bright orange yellow, sweet and of good flavor. Tree vigorous and healthy. An excellent variety for orchard culture.

Elberta. A large yellow peach of recent introduction. Tree vigorous, strong grower. Fruit oval, yellow, with blush on sunny side. Flesh pale yellow, tender and juicy. One of the most desirable of the new varieties.

Foster. Very large, deep orange red. Flesh yellow, very rich and juicy and of excellent flavor. Ripens in September. Originated in Medford.

Globe. A new variety. Strong and vigorous in growth and an enormous bearer. Fruit very large, yellow shaded with crimson. Flesh very rich and luscious. Should be in every collection. Ripe in September and October.

Carman. A new peach, originated by Mr. Carman, Editor of the Rural New-Yorker. This has not been cultivated long enough to determine its full value, but it is very highly recommended.

Fruit of large size, yellow, shaded with red; flesh juicy and of fine flavor.

Oldmixon. An old variety, but one of great value. Succeeds in almost all localities. Fruit large, yellowish white with a deep red cheek. Flesh red at the stone, tender and excellent.

Stump. A first-class variety. Fruit large; flesh white, very juicy with an excellent flavor; parts freely from the stone. Ripens in September.

Late Crawford. This is the standard late peach. Fruit of large size, greenish yellow, with dull red cheek. Flesh red at the stone, of rich, juicy, vinous flavor. Ripens the last of September.

Grapes.

Grapes can be grown so easily by any one who has but a small extent of land, training the vines on a wall, on a trellis, on the side of a building facing south, or to single stakes, that it is almost in every ones power to grow a few varieties at least for their own use. Light warm soil, well drained, is desirable, as the grapes will mature and ripen sooner than on soil not well drained. Wood ashes and fine ground bone are special fertilizers for the grape, as they will cause the vine to grow shorter jointed wood which will ripen better than long jointed wood. From the great number of varieties in cultivation, a selection of a dozen kinds will give one a good variety of the different colored grapes.

Campbell's Early. This is a very early grape of recent introduction, and wherever tried it is spoken of in the highest terms. It is earlier than the Concord, has a larger bunch than that first class grape and as a long keeper after being fully ripe is unequaled by any known variety. A black grape with very handsome bunch and berry. Ripens in September. Flesh very tender and juicy; flavor sweet, rich, aromatic; quality best.

Green Mountain. This grape was introduced a few years ago by Stephen Hoyt & Sons, New Canaan, Ct. The bunch is of good size; berries medium, greenish white in color; skin thin; pulp tender and sweet. Very early, always fully ripe in August. Vine vigorous and healthy, yielding heavy crops of fine grapes. A very desirable variety.

Eaton. This is one of the largest grapes in cultivation, both in bunch and berry. Vine vigorous, healthy and productive. The grapes have a tender pulp, and are juicy and of fine flavor.

Moore's Early. This is one of the earliest of the black grapes. Originated in Concord, Mass., by John B. Moore. This grape has been largely set in vineyards, in the grape growing localities, and is very highly esteemed as a reliable, profitable variety. Color black, with a heavy blue bloom. Ripens from two to three weeks before the Concord. Quality excellent. A first class variety.

Worden. A large new variety, a seedling of the Concord. Bunch and berry large size; color black with bluish bloom; fruit sweet and of fine quality. Ripens from one to two weeks before the Concord. No early black grape stands higher than this.

Brighton. A reddish grape of the highest quality, bunch and berry of good size; vine vigorous and productive. Fruit roundish, dark maroon color, flesh tender and juicy with a peculiar aromatic flavor. One of the best varieties for the home garden.

Moore's Diamond. A first class white grape. Bunch compact and shouldered. Berries large, round, juicy, with but little pulp. Vine a good grower, with thick healthy foliage, hardy and productive. Ripens a little before the Concord. Very promising.

Pocklington. Originated in the state of New York. Vine a very strong vigorous grower, hardy and productive. Bunch and berry of good size, color a lemon yellow. Flesh sweet, with a rich aromatic flavor. Has given good satisfaction to all who have grown it.

Delaware. The standard of quality. Bunch rather small; berries medium. The flesh has an exceedingly rich, spicy flavor. Vine not a strong grower; foliage apt to mildew.

Concord. Without any question this old and well known variety, as a reliable and profitable grape, stands at the head of the list. Adapted to a larger extent of our country than any other, it has been more universally grown than all others combined. Not of the highest quality in its fruit, still it combines so many desirable qualities that it is essentially the grape for the home garden. Bunches large and handsome; berries black with a heavy blue bloom. Flesh juicy and refreshing.

Salem. This is regarded by many as the best of the Rogers Hybrids. The vine is a strong grower, producing large bunches of reddish grapes, with a very sweet and rich flavor resembling that of foreign grapes. An excellent variety.

McPike. This new and wonderful grape is of western origin and is introduced by a western firm. It seems to have astonished all who have seen it on the grounds of its originator, not only in the size of its bunch and berry, but also in its wonderful vigor and the healthiness of its foliage as well as in the tenderness and delicious flavor of its fruit. Bunch and berry said to be fifty per cent larger than the Worden. Flesh ripens to the core, and is of excellent flavor, resembling the Black Hamburg. Wherever it has been exhibited at various State fairs in the west it has taken all first premiums. Another very important point in its favor is its long keeping quality after being fully ripe. The highest authorities in horticulture speak of it as a grape of wonderful qualities and promise.

Small Fruits.

The advancement of the culture of the small fruits in the last fifty years has been phenomenal. Previous to the introduction of the Hovey's Seedling strawberry, by the Messrs. Hovey of Cambridge, in 1836, the varieties of strawberries cultivated were few in number and inferior in size and productiveness as compared with the large number of choice varieties now cultivated.

The originating and introduction of the Hovey's Seedling was a marked advance in the culture of the strawberry. This new variety was a large handsome berry, deep shining red in color, flesh firm and of excellent quality. It was a pistillate variety and was usually set in beds with every third row of the Boston Pine, a staminate variety, to insure perfect fertilization of the Hovey's Seedling blossoms. When fully fertilized it was immensely productive of large first class fruit.

Since the introduction of Hovey's Seedling, strawberry culture has extended over the greater part of the country. Many new kinds of high merit in quality and productiveness have been introduced.

Since the close of the civil war the culture of strawberries has largely developed in the southern states and our markets now are supplied with this luscious fruit several months in the year.

Many of the new varieties are perfect in blossom and are grown without any other varieties being set with them.

The strawberry is of such easy culture that every home garden should have its plot for family use. Among the great number of varieties I will name a half dozen of the best—Belmont, Marshall, William Belt, Nick Ohmer, Beverly and Sample.

As following the strawberry, raspberries are highly prized for family use. Of the red varieties Cuthbert and Loudon are most desirable, and of the Blackcaps, Cumberland and Gregg are hardy, productive, and of fine quality.

Following in succession come the better varieties of blackberries — Snyder, Erie, Eldorado and Rathburn, first class kinds, producing large crops of berries of excellent quality.

Of that old and well known fruit, the currant, Fay's Prolific, Versaillaise, Victoria, and Pomona as new varieties are improvements on the old kinds of fifty years ago.

The gooseberry in some sections is largely grown. The better varieties now in cultivation, Josselyn, Smith's Improved, Industry, Triumph, and Columbus rank very high, and are not as subject to mildew as many of the older kinds. In the foregoing paper I have endeavored to name varieties in the different classes, which are best adapted to our soil and climate, as demonstrated by many years of cultivation in the different sections of New England. To those not well acquainted with the many varieties of fruits, these lists will, I trust, be a guide in selecting kinds which will be satisfactory in their future experience.

The details of setting out and after treatment I have omitted for the purpose of calling out by questions from the audience different methods and experiences on these points which although essential to know, differ greatly in application in a variety of soils and locations. I trust those present will freely question on any points which they desire to bring out.

Discussion.

Samuel H. Warren inquired as to the character and value of the Early Canada peach.

The lecturer replied that it resembles other very early peaches and like them will sometimes spot with rot.

Varnum Frost said that he could not agree with the lecturer in regard to some of the pears recommended by him. The Anjou has great failings; it is apt to be infected with spots of black fungus. Some have grafted their Anjou trees with Bartlett. The Keiffer pear is worthless.

The lecturer said that many peaches reproduce themselves from seed, the Melocoton, for instance. He had an orchard of Roxbury Russet and Baldwin apples which interlocked, and some of the limbs of the Baldwin trees showed a mixture of Russet, and some of the Russets showed the influence of the Baldwin pollen. The Keiffer pear is valuable to top graft with Bosc and other poor growing sorts. We should remember that kinds which do poorly with one may do well with another.

Mr. Frost said that the Hovey's Seedling strawberry used to grow with only the Boston Pine to fertilize it; there was nothing to surpass these two kinds. The Boston Pine was never beaten as regards flavor.

The lecturer spoke of a neighbor who raised fine Hovey's Seedlings and set out a bed for a friend which never bore.

E. W. Wood said that there had been no particular improvement in fruits in the last twenty-five years — not as much as in flowers. One man has done perhaps more than any other man in the country,—Luther Burbank. He originated the Burbank potato many years ago while residing at Worcester. Afterwards he went into the nursery business in California and devoted himself especially to originating new fruits. The speaker wished that we might have many more young men disposed to undertake the improvement of fruits. This can only be done by cross fertilization. We have none worth growing that were not grown twenty-five years ago. An Ex-President of this Society was about to set out an apple orchard of six hundred trees, and went to Mr. Curtis, one of the largest dealers in apples, to get his advice as to the best kinds to plant. It was solely a mercantile operation and Mr. Curtis advised him to set out five hundred Baldwins and the other hundred of different varieties, but on second thought he advised to plant all Baldwins. No other apple will return so many dollars

to the grower as the Baldwin. The speaker said that if he were a young man he would buy up land which can be got at a very low price and plant it with Baldwin apple trees.

Fifteen years ago no pear was so profitable as the Anjou, but within the last five years it has been failing. The Bosc is one of the best. The speaker esteems the Dana's Hovey the best pear grown; it requires thinning to get the fruit of good size. The Clairgeau would never be put into a list of pears for home use. It is purchased by hotel-keepers because it is as handsome as a bouquet and lasts tremendously.

There is scarcely a strawberry seen on our tables now that was grown fifteen years ago, and most of the kinds have been introduced within five years. We can get new varieties very quickly and there seems to be a prospect of continued improvement.

Great additions have been made to our fruits in the way of Japanese plums. Some have found them to rot even after thinning. At the Agricultural College the buds were reported to be as tender as those of peaches.

Market growers are very careful about planting blackberries or raspberries. There has been a great advance in transporting fruit within a few years, so that we now have strawberries in our market nine months in the year, and the quantity of fruit sold has doubled and tripled.

Samuel H. Warren said that fifteen years ago he set out a hundred Black Heart cherry trees, and last year he pulled up all but five and headed those back.

Mr. Frost said that he did not believe in apples mixing by cross-fertilizing; the Baldwin, Porter and Hubbardston are just the same as they were fifty years ago.

The lecturer said that the change produced by cross-fertilization is not in the fruit, but in the tree produced from the seed. The Marshall strawberry does not flourish everywhere. The conditions of fruit growing are very different now from what they were forty years ago.

John Ward said that he planted Hovey's Seedling strawberry with Early Virginia on one side, and for the first rod he got a good crop and beyond that none. The influence of the pollen of the Virginia did not extend beyond the first rod. There is no

better strawberry now for quality than the Hovey though some kinds are more productive. When he was a boy the St. Michael pear began to crack, and the Anjou is now becoming spotted and cracked, as may be seen by some in the market. The Bartlett seems to stand when others do not. There is no better pear than the Bosc. There is danger of overdoing the business of raising late pears; there is no demand for them after the first of December.

Joshua C. Stone asked, what is the use of setting out trees? Life is too short. People want green leaves more than they do fruit trees. There are as good apples and pears raised now as ever there were. He knows one man who has all kinds of fruits and has been forty years raising them, who is going to move away his seven thousand dollar house and put in a twenty thousand dollar house. The speaker dug up all the apple trees he had in good ground and has grafted over all his Baldwins and put in Williams and other new apples.

The lecturer said, in reference to Mr. Stone's remark that life is too short to justify planting trees,—Suppose you do not get a crop of fruit, somebody will come after you to get the benefit of your work. [Applause.]

Benjamin P. Ware said that the Essex Agricultural Society some years ago offered a premium of one hundred dollars for an apple as good or better than the Baldwin, but it has not yet been taken. He advised planting orchards in a hill town, and when the trees were just coming into bearing the owners got four or five dollars per barrel for the fruit in a year when apples were scarce. He asked whether Mr. Stone could make us believe that people are getting out of the way of eating fruit. When Luther Burbank wanted to go to California, where he is now a great originator of new fruits, J. J. H. Gregory paid him a hundred dollars for the Burbank potato, which set him up there. This variety is very popular through the west and in Europe.

Michael Sullivan had heard it said that the average market gardener has no respect for an apple tree, which may be true. Sixteen years ago he had no apple trees on his homestead, but twelve years after he had one of the finest crops of Baldwins. Last year he would have had a good crop but for the high wind in September, but he put fine apples into his cellar. Land is

getting too valuable for orchards in the vicinity of Boston, as at Revere.

William C. Strong said that a great many of the new plants cultivated by florists have been imported from abroad, but a much longer time is required in producing new varieties of tree fruits than of flowers.

Many years ago he bought the largest grapery in the country, and raised in it three tons of grapes annually which sold for from one to three dollars per pound; now we get them from California for twenty cents per pound. The apple is the fruit of Massachusetts. Messrs. Wilder and Hovey had two or three hundred varieties of pears, and could get six, eight or ten dollars per bushel for them, many varieties of which could not now be given away. He would not plant six hundred pear trees all Bartlett, though. We want to confine culture to a few varieties. He would discard Clairgeau and Keiffer; we want better kinds.

Mr. Wood said that florists here do not go abroad for new chrysanthemums; we have better varieties here than can be found in Europe.

Joseph H. Woodford said that we have the markets of the world and all the surplus fruit can be sold abroad. We can get better prices for fruit there than we can here. A young man can set out fruit trees and have a bank which in fifteen years will yield dividends. Though not a young man he means to set out a hundred trees this year. He thinks it every man's duty to set out fruit trees; somebody will come after us who will profit by them.

President Hadwen said that in 1842 he planted the seeds from which his apple orchards have grown, and when they attained a proper size he budded them in the nursery. Nature has never produced but one Baldwin, one Gravenstein, or one Rhode Island Greening apple. The Baldwin is the apple for the million, but the million do not know the best. Persons educated in a knowledge of the best varieties do not buy Baldwins. They are put up in carloads for wholesalers; his apples go to other parties. The Foundling is one of the best apples; it is a native of Worcester County.

The lecturer said that his father set out an apple orchard when about sixty-eight years old, and lived to sell hundreds of dollars worth of fruit from it.

Mr. Stone spoke of a man who bought ten thousand barrels of apples for a dollar a barrel and paid twenty-five cents apiece for barrels to put them in.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 16, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered on the John Lewis Russell foundation:

STUDIES OF SOME TREE-DESTROYING FUNGI.

By Professor GEORGE F. ATKINSON, Cornell University, Ithaca, N. Y.

When invited by your Committee to give the lecture this year on the John Lewis Russell foundation, I understood that the subject was to be in general, "Parasitic Fungi." It was but a week ago that I learned that the foundation for these lectures on parasitic fungi was made by Professor Russell for the purpose of presenting the "latest discoveries of the connection of the Fungi with Horticulture." It was then too late to think of changing the subject of this address to deal more particularly with the latest discoveries of fungi in relation to horticulture. But I trust that the subject I have chosen will be none the less acceptable. For while the studies which I am to present have been made chiefly on forest trees, some of the observations have also been made on fruit trees and shade trees. In a number of cases the same species of fungi are enemies both of fruit trees and forest trees, while the general problems of the entrance of the fungus and its progress in the tree are the same. The subject contributes very materially, if not directly, to the interest of horticulture.

The fungi of which I shall speak are sometimes called "wood-destroying fungi," because a number of them are known to infest timber and cause its decay. Few of them can enter a thoroughly sound tree — that is, they cannot from the outside gain an entrance unaided through the living layer of tissue, the cambium. The cambium envelops the entire tree, root and branch, and thus in an uninjured condition constitutes an effectual barrier against many of these tree enemies. For their entrance they are usually dependent upon other means than their own activities. These places of entrance are wounds from mechanical injuries due to a great variety of causes, wounds caused by truly parasitic fungi, and lesions caused by the natural process in shedding the lower limbs, when the process of healing over may be slow. For the reason, therefore, that quite a large number of the tree-destroying fungi enter through wounds, they have been called also "wound parasites."

I shall not attempt to review all the good work which has been done on the subject, but you probably recall the first address delivered on an occasion similar to this, by Dr. Farlow, on "Diseases of Trees likely to follow Mechanical Injuries." Mention should be made of the important work done by Professor Hartig in Germany on diseases of forest trees.

My own studies of this subject began about five years ago, and the results have been accumulating since that time, while very little of the matter has as yet been published. It has been my plan, as far as possible, to select one or more individual cases and then endeavor to trace the history of the relation of the fungus and its host. This would include a study of the present conditions, and an effort to determine, by examination, the time in the past when the fungus entered, the mode of its entrance and progress, as well as the probable cause of the wound which provided the entrance court for the tree enemy. In a number of cases these have been worked out quite satisfactorily. The studies have been made in New York State, chiefly at Ithaca and in the forests of the Adirondack Mountains.

Photographs have been made from time to time during the progress of the studies, and with the aid of them I hope to reveal the history of those cases to you.

A word might be said at the outset in regard to the relation of

these wood-destroying fungi to others, as well as in regard to their structure. They are among the higher fungi and belong to the larger group known as the *Hymenomycetes* to which the mushroom also belongs. In fact it is becoming customary with some to apply the term "mushroom" to all of the *Hymenomycetes*. However widely these plants differ in their form and structure they all agree in the general character of their fruiting surface. It forms a thin layer, or "membrane," covering definite parts of the fruit body, and consisting of innumerable club-shaped cells standing side by side. Each one of these club-shaped cells is called a *basidium*, and usually bears four spores.

There are several large families, or orders, in the group. I will call attention to a very few in each family in order to show more definitely the form and general character of the species which we will examine more carefully. In one of these families the fruit body is often spread over the surface of the wood in thin smooth patches, or some forms are shelving, when the underside is smooth and is the fruiting surface. These belong to the family *Thelephoraceæ*. A few of its members are very destructive to wood and some are parasites on trees. In another family the members are known as *coral fungi*, a large number of them belonging to the well known genus *Clavaria*, from which the family name *Clavariaceæ* is derived. The fruiting surface is distributed all over the surface of the plant. To a third family, *Hydnaceæ*, belong the hedgehog fungi, with the fruiting surface on spines, a few species of which are well known. A number of the members of the two last named families grow on wood, but often appear in late stages of decay. A few species like *Hydnum septentrionale* on maple, and *H. Schiedermayeri* on apple, are destructive.

The two largest families are known as the *Agaricaceæ*, to which the common mushroom belongs, as you well know, and the *Polyporaceæ*. In the latter family the fruiting surface is in the form of a honeycomb on the underside of the fruit body. It is to this last named family that the species belong of which I shall speak at some length.

Polyporus borealis.

Polyporus borealis occurs on pines, spruces, the hemlock, etc., and is widely distributed over the North Temperate Zone. It

occurs on living or dead trees, and is a "wound" parasite, entering through broken branches, through wounds caused by impact of falling timber, or where the cambium has been scorched by fire. The fruit bodies are entirely white. When old or dry they often take on a pale yellowish tinge. They are shelving, the cap attached directly to the tree, broad at the free end and tapering somewhat in a wedge-shaped manner toward the base. They are rarely single, and sometimes scattered over the trunk. They usually occur several close together overlapping in an imbricated fashion, and joined at the base in a common trunk at the exit from the tree.

The fruit bodies are rather soft and spongy. They last only for the season. They are from ten to twenty centimeters (four to eight inches) long by six to fifteen centimeters broad. They form larger masses where several are joined. The upper surface is rough with coarse tufts of mycelium giving it a very shaggy or hispid appearance. The honeycombed surface is below. The hymenium consists of quite regular pores with rounded openings in some specimens, or irregular, elongated and sinuous pores in other specimens, resembling the pores of *Dædalea*. But they are evenly sunk in the substance of the cap and therefore lack the essential character of that genus. The walls of the pores are thin, and the edges often irregular and jagged.

There are two cases of its occurring on living coniferous trees which I have carefully studied. One case is that of a hemlock spruce (*Tsuga Canadensis*). The other is that of a red spruce (*Picea rubra*), the common timber spruce of the Adirondack region.

The hemlock spruce was a large tree, sixty centimeters (two feet) in diameter, on a steep slope in one of the deep gorges (Fall Creek) at Ithaca, N. Y.

This example was observed in the autumn of 1899. The fruit body of the fungus was situated on a large wound on the trunk near the base. It consisted of several caps closely joined at their origin from the trunk of the tree. A section through the entire fruit body showed the radiating lines formed by the general direction of the mycelium in the caps from their common origin in the tree trunk.

We have a clue to the manner in which the mycelium of the fungus entered this particular tree. A log lying in the foreground, close by the trunk of the affected tree, told the tale. This tree in its descent, years ago, struck the slightly projecting base of the standing hemlock, and knocked off a large area of the bark and cambium, or growing region, at this spot. This wound was too large and the tissues too much bruised to permit rapid healing over. It offered therefore a sure infection court through which the mycelium entered.

It was also shown that the healing has been going on for a long time from the margin of the wound. But the wound is so large it is yet far from being healed. Had it later healed over, it could not, of course, save the tree from destruction because the wound parasite was already permanently established in the interior, or heartwood. Thus the wound which gave entrance to the fungus mycelium also offers a place for its exit in the formation of the fruit body.

From the time the mycelium entered the trunk at this wound, which must have been from twenty-five to forty years ago, the mycelium gradually made its way into the heart, and from there grew downward into the roots and upward through the heart to the top of the tree. Its presence on the roots was determined by the occurrence of the fruit bodies from a few places on exposed parts of the large roots, while external evidence of its having reached the top of the tree was shown by a number of dead limbs in the top, some of which had fallen. Evidence of its having reached the top was also found on cutting down the tree, and taking out sections at different points in the trunk. Here was found an abundance of mycelium and the heartwood was in an advanced state of decay.

The mycelium advances in certain definite directions in the wood of the tree. This is probably due to the structure of the wood. It grows in three different directions: parallel with the axis of the tree trunk, *i. e.*, up and down; radially, from the center toward the periphery; and tangentially. At one stage of development the mycelium may be very profuse and abundant. It then is present in the form of cords or strands which lie radially or tangentially in the channels which have been dissolved by

the action of the fungus ferment on the wood. These strands lie quite close together and are parallel. After being developed in considerable abundance the strands of mycelium largely disappear leaving behind open channels and furrows through the wood in the radial and tangential directions.

Shrinkage of the wood occurs at the same time because of the disappearance of a considerable content of the water and of the wood substance. This shrinkage results in checking the wood into numerous minute cuboidal blocks, marked off primarily by the position and solvent action of the mycelium. This becomes more pronounced as the wood dries, if the tree is cut, or if blocks of the wood are cut from the trunk and allowed to dry. In the early infection of the wood, and the early stages in the advance of the mycelium, before the larger strands have become established, the openings made by the mycelium are very minute. They take the same direction as the larger opening. In fact, the mycelium, instead of making a general attack upon the tissues, begins its advance at certain regularly separated points, and then extends along in parallel lines. If the wood is cut out at this early stage, one can see these minute perforations thickly scattered over the exposed surface. Sometimes, even in this early stage, shrinkage of the wood will have taken place. If not very marked when freshly cut from the wood, the shrinkage of the wood on drying marks it off in a beautiful manner, by fine lines and holes, into cuboidal areas.

In many of these cases of the heart rot of trees, after the heartwood is well affected, the mycelium, being well established and vigorous, gradually encroaches on the cambium or living area beneath the bark. In this way, many of the branches in the top of the tree die, and in some cases later the cambium of the trunk may be so destroyed as to kill the tree outright.

The red spruce example, in the Adirondack woods, was a tree of handsome proportions near Piercefield Falls, on the Raquette River, left by the lumberman a few years prior to 1896, the season when I observed the tree. At some distance there was no indication that the tree was diseased and I enquired of my guide, who had at one time some experience in cutting timber, why the tree was left. "That tree ain't no good," he replied. As we ap-

proached nearer, he said, "Don't you see the gum running from all the knot holes?" This, he explained, was regarded as a sure sign of "heart rot." Furthermore the tree was "checked" on one side, the crack being quite large and extending for some distance. The check was probably caused by a wrench given the weakened tree during a heavy wind. There was no other external evidence that the tree was diseased, and to satisfy myself that the tree suffered from "heart rot," I had my guide cut out a few blocks of the wood from the trunk. Two inches beneath the bark the wood was found in a "dozed" condition. The heart was not in a very advanced stage of decay though the area was very extensive. The mycelium visible to the eye was very scanty. Still the wood showed numerous fine perforations, and as some shrinkage had taken place, it presented the very fine divisions into minute blocks described above. I then searched more carefully for some fruit form of the fungus and found at the ground level, buried under leaves, a fruit body of the *Polyporus borealis* between two buttresses of the base of the trunk. The tree was not felled, and consequently there was no opportunity of ascertaining the special mode of infection in this case.

Polyporus sulphureus.

The sulphur polyporus has a very wide distribution and occurs on a great variety of broad-leaved trees as well as on certain of the conifers. It is known on the apple, walnut, butternut, locust, oak, ash, pine, hemlock spruce, and other trees. It occurs on living trees, the fruit bodies growing from knot holes or wounds from the mycelium in the heart of the tree; or the fruit bodies arise from portions of the trunk killed by the fungus. It is also a very common fungus on dead and decaying logs, stumps and roots.

The plant is easily recognized by the yellowish color of the caps, which are of the shelving form, sometimes scattered, but more often closely overlapping. Sometimes the caps are so closely crowded as to form a large tubercle from twenty to twenty-five centimeters or more in diameter. The upper surface of the cap is a bright orange red, while the lower surface, the honeycombed fruit surface, is sulphur yellow. The fruit bodies

are rather soft, the color soon fades and they are quickly attacked by insects, or decay after several weeks. They are short lived therefore, while the mycelium within the trunk is perennial, or at least lives from year to year without an annual infection.

Oak Tree killed by Polyporus sulphureus. A scarlet oak tree (*Quercus coccinea*) growing near the grounds of Cornell University was under observation for several years. The tree was standing on the edge of the Fall Creek gorge. It was first observed in 1897. At this time the mycelium of the sulphur polyporus had advanced so far from the heartwood into the sapwood, that the latter, as well as the cambium layer, on one side of the trunk near the base, had been killed. This gave an opportunity for the exit of the fungus and the formation of the fruit bodies on the outside. They were fine specimens, but were much more scattered than is usual with this species. The fruit bodies appeared during the succeeding seasons of 1898 and 1899. During the latter season the tree died from the injuries of the mycelium in its advance on the cambium, or living portion, of the trunk. It was felled, and several sections were cut out from the trunk for observation.

The decay of the heartwood had reached an advanced stage so that it was quite soft, and the moisture content was much less than in healthy trees. The lessening of the water content of the heartwood during the growth and spread of the mycelium caused a shrinkage in the wood. This produced several radial checks into which the mycelium had grown forming sheets of pure mycelium, sometimes called "punk."

Polyporus sulphureus imprisoned in a White Oak. A white oak tree about forty years old was growing quite close by the side of a larger tree on the grounds of Cornell University. The tree leaned slightly away from the larger one and there was a one-sided development of the branches induced by stronger illumination from that side.

The tree was felled in order to see if there was a corresponding asymmetry in the annual growth of the trunk which might be manifest in the excentric position of the annual rings. Before cutting the tree down there was no evidence that it was diseased. The

trunk to all external appearance was sound. There were no broken limbs, no wounds, visible. On cutting the trunk into sections to study the annual rings, the heartwood through a large part of the trunk presented unmistakable evidences of partial decay, following many of the annual rings and along by the medullary rays. The wood in these areas was being disorganized by the mycelium, and the latter was forming the incipient stages of punk.

The case was an interesting one, since the question arose as to how the fungus, now completely imprisoned, gained entrance to the trunk. The butt was sound, so the fungus could not have entered through the roots. Perhaps it entered at a large branch broken a number of years ago and now completely healed over.

All of the sections showed more or less decay at the central core of the heartwood where some of the wood was so badly decayed in some sections as to break out or crumble from the friction of the saw. One of the sections, not far from the base of the trunk, presented on the lower end, and near the periphery, a circular black area, resembling the dead remnant of a branch which might have broken off years ago, and healed over. On the surface of the same side of this section was a prominent enlargement in the trunk, resulting from the healing process. But the evidence of a wound here was largely obliterated because the old bark had formed over the surface. There was only a minute opening, very obscure, which was not completely healed over.

By examining successive sections of the trunk below this one it was observed that this black "core" representing the broken portion of the young tree gradually came to lie exactly in the central core of the trunk. This indicates quite clearly that the injury occurred to the tree in the sapling stage, and that the sapling was broken off instead of one of the branches. One of the upper branches then became the "leader" and in course of time the broken end of the sapling was enclosed by the healing tissue.

This section of the trunk was then sawed through lengthwise and in such a direction as to split the core of the dead sapling radially from the center of the new trunk. A view of one-half of this section was photographed. It showed the origin of the branch which became the new "leader" of the tree, as well as

the large and irregular end of the broken sapling covered over by the healing tissue.

The cross section shows that this injury occurred more than thirty years ago, very near the time that Cornell University was founded. Some accident, the cause of which we cannot now determine, befell this tree in its youth and the sapling was broken off, while one of the topmost remaining branches in time replaced the main trunk.

An injury resulting from this kind of fracture leaves a long and slivered end some distance from the point where healing takes place. It must be a number of years, then, before the healing process can advance so far as to cover the fracture. In this instance over thirty years elapsed. The broken and slivered end of the sapling offered the most favorable lodgement place for spores of fungi, and for the accumulation of detritus resulting from the constant weathering of the exposed surface. In these places moisture is also conserved. The conditions presented are favorable for the germination of the spores and entrance of the mycelial threads. No more favorable infection court could be provided whereby the fungus is enabled to enter the heartwood.

From this point of infection the mycelium spreads both ways, down the old trunk of the sapling, and upward in the branch which forms the newly established leader. The progress of the fungus is comparatively slow, and the disorganization of the wood accompanies it. The slow growth of the mycelium is probably due to several causes, the resistance which it meets from the wood, the action of tannic acids in the heartwood, as well as to the small amount of air in the interior of the tree. When sections of the trunk were cut, and piled together, the mycelium at the cut surfaces grew very rapidly. The mycelium here had access to air, and the moisture was conserved by the cut surfaces being in contact. In this way it was easy to demonstrate the presence of the mycelium in parts of the wood which to the eye appeared sound. The mycelium grew out from the wood into the moist air, along the concentric annual rings and the medullary rays, so that within twenty-four hours the location of the mycelium at these points was plainly demonstrated, and photographs taken at this time marked the location

of the mycelium in the infected areas. In several days' time, however, the mycelium spread out between the cut surface forming thin sheets of "punk."

Polyporus igniarius.

This species occurs on broad-leaved trees. It is known on the apple, oak, alder, beech, birch, maple and other species. The fruit bodies are hoof-shaped, very hard, almost stony, the upper surface black, while the lower surface, the fruiting surface, is brownish. The upper surface is marked by concentric furrows and ridges which mark off the annual layers. The fungus is thus perennial.

It is very generally distributed through hardwood forests. It is especially abundant in certain hardwoods in the Adirondacks. In some sections a large percentage of the beech, birch, and maple is affected. A quantity of the wood of affected trees was collected both at Childwood, St. Lawrence County, in 1896, and at Clearwater, Herkimer County, in 1898. At the latter place, the second flag station north of Fulton Chain, on the New York Central Railroad, there were excellent opportunities for studying it on the maple, and for determining the conditions which favor the entrance of the fungus into the heart of the tree. Since the mycelium cannot enter through the living cambium of the tree, an "infection court" must first be provided. These infection areas are provided in a variety of ways, in general their origin being the same as for other timber-destroying fungi which enter through wounds.

The conditions prevailing in a large portion of the mixed forests of the Adirondack region are such that a very common point for entrance is provided by the falling of the lower limbs. In the mixed forests the spruces and pines tower so far above the hardwoods as to cut off much of the light. The hardwoods are thus so shaded that the area of foliage is considerably lessened, many of the trees having few limbs, and then bearing few leaves compared with trees in the open, or even in a hardwood forest where all the trees have an equal chance for light.

A maple tree about twenty centimeters (eight inches) in diameter in the mixed forest at Clearwater had been affected by the

Polyporus igniarius for a number of years. The fruit body was several years old, of a triangular shelving form, and fifteen centimeters broad. Several entire sections of the trunk, one of them bearing the fruit body of the fungus, were collected and shipped to Ithaca.

Cross sections of the tree present a very characteristic and often beautiful marking of the wood due to the different stages of decay and the coloration of the wood. The more advanced stages of decay lie at the centre, the less advanced ones towards the periphery. The sound wood at the periphery is limited from the decayed area toward the centre by a broad and irregular discolored area. The discolored area is of a light brown color, and this is farther sharply defined from the pale yellowish white area within by a narrow black line. The later stages of decay in this maple tree advanced toward the periphery in separated columns, showing on cross section a radiating or digitate figure. The radiations, or figures, alternate with dark areas which extend inward from the periphery. Sometimes this figure is quite regular around a portion of the margin, while other portions are very irregular. The decay of the wood seems to proceed in waves from the centre toward the periphery, so that there appear several different stages. The outer one is marked by the dark discolored area, the next is pale yellowish white, the wood being quite soft, and an older and more advanced area at the centre of the heart. These different stages in the process of decay from the centre to the periphery are usually limited by the black line, which is bordered by a more or less well defined corona of color, darker than the area upon which it is advancing. In many cases these areas of decay progress very irregularly, and the figure becomes complicated and confused, especially in the later stages of the decay of a tree, so that dark lines extend very irregularly.

An examination of several maple trees bearing the *Polyporus igniarius* gave evidence that the peculiar discoloration of the wood accompanied the mycelium of this species of fungus, and might perhaps be sufficient to identify the species even where no fruit form of the fungus was present. An examination of the trunks of the beech bearing the *Polyporus igniarius* collected at Childwood, N. Y., in 1896, presented the same characteristic coloration

and marking. The maple is said by some lumbermen to be troubled by a disease which they term "black heart." It would be interesting to know if the coloration produced in the heart by the action of the mycelium of *Polyporus igniarius* is identical with this "black heart" disease.

It now becomes a matter of interest to determine the mode of entrance of the mycelium of this fungus into the tree. The fruit bodies were found to be situated at wounds. These wounds, or places of exit for the fruit form of the fungus, were "knot" holes formed by the dying away of the lower limbs, and the failure of the healing tissue to close the wound thus formed. The fruit form can make its exit through quite a small opening, and usually does, growing to larger dimensions outside as it ages. The first year's growth of the fruit form may then be but a small protuberance from one to two centimeters in diameter and showing no fruiting surface. This often increases in size each year, slowly, until from four to five centimeters in diameter, when it may increase more rapidly and each year form a new fruiting surface beneath.

A young fruit form was found on a trunk of a maple ten centimeters in diameter. This was the only evidence that the tree was diseased, all the other wounds at fallen limbs having healed over. A section of the trunk showed that the heart rot had begun. It was in the first stages of the disease and confined to a limited area, —that directly at the centre of the heart. There was present here only the discolored area which is characteristic of the younger area in older stages of the disease, described above. It is quite likely that the fungus enters at these slow healing wounds where the lower limbs have fallen, and that in some cases the wounds might entirely heal over and imprison the mycelium before the fruit bodies had an opportunity to form. That there was abundant opportunity for the mycelium of the fungus to enter at these wounds is shown by the evidence of a large proportion of the young maple trees in the mixed forest at Clearwater.

I have already called attention to the deep shade in the spruce woods where the tall spruces overtop the broad-leaved trees, and of the effect which this shade has in checking foliage development on the younger maples. Even on the young and middle-aged maples there are comparatively few branches, and these near the

top of the tree, the lower branches having died and dropped off. The same can be said of the beeches, birches, and other broad-leaved trees. Even on these topmost branches there are comparatively few leaves, because of the low light reaction. This means then that a comparatively small amount of the carbohydrates necessary in the formation of cell walls and woody tissue is manufactured. Consequently growth and the formation of wood goes on slowly. This interferes in a striking way with the healing processes needed to cover up the wounds caused by the falling limbs.

When there is an abundance of foliage and light, carbohydrates are formed in sufficient abundance to heal at a rapid rate. The healing tissue is firmer than the normal wood and working from within and close to the branch soon heals over and excludes the mycelium of the timber-destroying fungi. On the other hand, when there are few leaves and a small amount of starch is formed, the healing process goes on slowly, and before the opening caused by the falling limb can be closed, the portion of the branch exposed first undergoes weathering, and later the mycelium lays hold and enters, reaching the heart of the tree before the barrier of healing tissue is formed. From observations during several seasons it seems that this is a very common mode of entrance for the timber-destroying fungi in the broad-leaved trees.

A number of cases observed at Clearwater offer striking examples of the slowness with which the healing process goes on at branch wounds. The healing tissue formed slowly and did not close up against the base of the branch because of the small percentage of newly formed plant substance. Then for a series of years the healing would cease and an area around the knot would die back. Then for another series of years the healing would begin and advance over a portion of this dead area, when another period would intervene during which a still greater area would die back. In this way large and ugly open ulcers are formed, in which the wood within is exposed. This condition I have seen in young maples. On a number of them there were no fungus fruit bodies, but a section of the trunk showed all the characters of the heart rot caused by the mycelium of *Polyporus igniarius*.

The *Polyporus igniarius* has been known for a long time to in-

habit fruit trees, especially the apple, peach, etc., under certain conditions. During August, 1900, I observed an apple tree by the roadside a few miles south of Cortland, N. Y., with fruit bodies of this polyporus on it. A number of years ago the tree had been pruned, by cutting several large limbs near the trunk, and others out some distance from the trunk. The tree was probably diseased at that time and perhaps these limbs were dead or dying. This may have led to their amputation.

In all cases the fruit bodies of the fungus were formed at these cut surfaces, there being no other place of exit. The tree was probably seriously wounded when young, and the mycelium entering had spread all through the heart of the trunk and branches, but was unable to form the fruit bodies until the larger limbs were pruned.

Several of the branches of this apple tree, bearing fruit bodies, were taken for examination. The character of the heart rot is in all essential respects the same as those observed in the maple and beech.

Trametes abietis.

This plant is common on spruces and balsams. It is a shelving form, and much smaller than the species of polyporus just described. The caps stand out from the wood from two to five centimeters, are somewhat triangular in side view, and broader than long. The base is usually spread out where it is attached to the tree, and often the entire plant is spread over the surface of the wood. In the latter case no shelf form is developed. The upper surface of the shelf is marked by concentric furrows and ridges, and is more or less velvety or hairy. When young the fruit bodies are tawny in color, but in age they become a darker brown, especially above, while the fruiting surface is a yellowish brown.

Trametes abietis on the Red Spruce. An interesting example of a red spruce (*Picea rubra*) was examined during September, 1898, in the Adirondack mountains. This was near Nehasena, Herkimer County, on the tract owned by Dr. Seward Webb. Through the courtesy of Prof. C. S. Graves, who then had the supervision of the forestry operations on this tract, I had the privilege of following the lumbermen for two days to inspect

trees, or portions of trees, which were discarded after they had been felled.

In this particular case the entire tree had been discarded, although two logs had been cut from the trunk. On approaching the tree I first came upon the stump, and searched here for some evidence of the reason for rejecting the timber. Near the periphery of the stump, in the older sapwood near its junction with the heartwood, was a crescent shaped area in cross section about three centimeters broad and fifteen centimeters long. This was distinctly marked off from the surrounding portion by the coarser fractures of the wood from the crosscut saw used in felling the tree. This indicated that the wood was here slightly "dozed." The remainder of the stump was sound. This small area, showing such a slight alteration in the wood, probably would not have been considered objectionable.

On examining the cut made for the first log, sixteen feet above, the entire heart proved to be badly decayed. A large part of the sapwood was also invaded, and the cambium was being encroached upon. There remained only a thin shell of living and unaffected tissue underneath the bark. The heartwood was so soft that the fracture from the saw teeth was irregular, roughly cut and partially "ironed" down by friction from the saw blade. Still another log above this one had been cut off by the woodmen in the hope that the heart would be sound, and that a good log could be obtained near the top. This cut, however, presented a condition similar to the first one, — the heartwood and sapwood were badly decayed. This condition was sufficient to cause the abandonment of the entire tree. There were no evidences, on the trunk below the branches, of the fruit bodies of any fungus, nor of any injury which might have afforded an entrance for the fungus. The cut ends of timber were so badly roughed up by the saw that no structural characters in the diseased timber, which might aid in the determination of the species of fungus, could be seen. The next step was to determine the fungus and the place where it entered the tree.

Since the decay at the stump was so slight, and the diseased area so small in comparison with the extensive injuries farther up in the trunk, it was quite evident that the fungus had not entered

from below. Upon searching in the top of the fallen tree, it was found that the "leader" of the tree, when about five centimeters (two inches) in diameter, had been broken off, possibly by a falling tree thirty or forty years ago. This leader, as a dead, decorticated object still projected from fifteen to twenty centimeters, above the point where the healing process was going on. One of the upper branches at this point had become the leader.

This old fracture of the main trunk, years ago, very probably provided an opportunity for the entrance of the fungus. Most conifers are provided with a quantity of free resin in the young branches or shoots, or the growing portion of the trunk. As is well known this resin flows freely from fresh wounds, and often continues for some time from old ones. The presence of this resin, and its free exudation from wounds, is nature's most effective method of blocking the way to the entrance of timber-destroying fungi in the conifers. When the wound is small, or the broken branch or shoot is young, the amount of resin forms an effectual barrier against the entrance of this class of fungi. Where the wound is larger, or the shoot is older, the process of healing over requires many years, and the older portions of the wood do not yield so great an amount of free resin.

The broken shoot in this example was five centimeters (two inches) in diameter. Healing began from twenty to thirty centimeters below the broken end. After thirty or forty years the dead prong still projected from fifteen to twenty centimeters above the healing surface, and probably never would have healed over. During this long time the fungus mycelium had an opportunity to enter, travel down the heartwood of the trunk and reach the butt. It is interesting to observe that while the fungus mycelium gained entrance through the broken area of the leader in the top of the tree, and traveled downward, the greater injury to the trunk was some distance below. This is probably due to the greater amount of free resin in the younger portion of the trunk above. While the mycelium traveled downward through this, it did not spread rapidly here nor bring about such a complete disintegration of the tissue. Sections of the trunk just below the point where the fungus entered, and for some distance below, show that the heartwood is firmer and harder, though invaded by the mycelium. The wood

is also very much stained, brown irregular areas being often marked off by black lines or divided up into smaller areas by black lines. The mycelium also traveled upward in the newly established leader of the tree. From the trunk it had invaded many of the branches in the same way. As is usual in such cases a number of the branches had been killed. These dead branches then yielded readily to the disintegrating action of the fungus.

On a few of the limbs fruit bodies of *Trametes abietis* were found. A branch bearing a fruit body and broken at this point shows the gross structural characters of the wood affected by the mycelium of this species. At one stage in the decay of the wood there are numerous areas in which the process of disintegration is localized, or where it proceeds much more rapidly than in the surrounding wood. These isolated centres are quite evenly distributed. The wood is broken down completely and largely consumed, leaving a partial skeleton, or nearly all of it having disappeared. The remnant, as well as a thin layer of the bordering tissue, is bleached and white. It is thus in strong contrast with the reddish color of the surrounding wood where the decay has been checked, or has proceeded more slowly. This rapid local disintegration, then, forms numerous small "pockets" distributed through the affected wood at a certain stage in the progress of the disease. They are plainly visible because of the bleached tissue.

These pockets are a characteristic feature in one stage of the heart rot of the spruce from the mycelium of *Trametes abietis*. If they are found in the heartwood of the trunk of this individual spruce it would be quite conclusive evidence that the heart rot here was caused by this fungus and that the infection having occurred at the broken trunk in the top of the tree many years ago had gradually spread down the trunk to the base and out into numerous branches, some of which have been killed as a result. Sections of the trunk of this tree were cut out at different places and shipped to Ithaca for study.

On splitting sections of the trunk, cut from the discarded logs, these characteristic pockets were found to be present. They occur in the portions of the trunk where decay has made considerable progress, the entire heart being invaded, and the fungus encroach-

ing on the sapwood. When cut with the crosscut saw, or even with a finer saw, the ends of the blocks do not show the pockets, since the soft wood is so readily fractured by the teeth of the saw. But when the end of a block is planed off smooth the pockets in transection are quite distinctly brought to view. From a side and end view the pockets are seen to be oblong in side view and cylindrical in cross section. They are from two to three millimeters broad and from four to six millimeters long. In the younger portions of the trunk, some distance above where logs were cut, and below the point of entrance of the fungus, and thus nearer it, the pockets were not yet formed. This is probably due to the fact that while the mycelium first penetrated the heartwood here, the latter being younger was more resistant and the process of disintegration proceeded less rapidly. The pockets appearing on certain of the branches is accounted for by the fact that these branches had been killed for some time, and were consequently in a less resistant condition.

The formation of pockets by the rapid disintegration of the tissues at many centres recalls the "peckiness" of cypress wood caused by the mycelium of a fungus yet unknown. The pockets in the cypress wood are much larger, however, and the structural character of the affected wood is quite different. In the case of the cypress trunks affected with this disease known as "peckiness," it is believed that the fungus, while developing at the centres, excretes an enzyme, or "ferment," which permeates the surrounding wood and acts as an antiseptic which prevents the further disintegration. It is possible that this is to some extent the case in the formation of the pockets in the spruce timber; that is, that the wood intervening between the centre of rapid disintegration, becomes permeated with an enzyme excreted by the mycelium which renders it immune for a time, or at least retards the disintegration of the wood. But if this is the case, the effect of the antiseptic is not lasting. In the case of fallen logs affected by the *Trametes abietis* the decay continues until all parts of the wood are in a much decayed condition. Still, in such logs, it is quite evident that the progress of the disintegration has been intermittent, certain centres having first decayed, and in time spreading from these pockets to surrounding areas until all the

wood is brought under complete contribution to the mycelium. In such decayed spruce wood, there are farther evidences that the decay has spread from numerous centres which have been extended until they finally meet. This is shown in the varying coloration of the wood, and especially by black boundary or limiting lines.

Rhizoctonia.

There is a class of root and stem diseases which has been more or less obscure because the fungus concerned is not known in the fruiting condition, or, if so, only in a few instances. Since considerable information has been gained during the last few years in identifying the mycelium, and in separating it from well known fungi causing similar diseases, it may not be out of place to speak briefly of them here. There is an additional reason for speaking of them because the fungus is known to damp off a number of different kinds of seedling forest trees, and even in some places to climb and grow over the surface of the branches of mature pear trees.

I first observed the fungus in Alabama while studying the diseases of cotton. Here it was observed attacking seedlings, damping them off, or producing ulcers at the ground level, called by the planters "sore shin," and thought by them to be wounds caused by contact of the shovels used in cultivation. Later, in 1895, at Ithaca, N. Y., I found it a common cause of damping off of seedlings, especially of lettuce, radishes, and often of cabbages, egg plants, etc.

In a number of cases where these seedlings have been grown under conditions favorable for damping off, this *Rhizoctonia* has always occurred on them, while cucumbers, cress, sunflowers, etc., grown under the same conditions and in the same soil were affected with the well known damping off fungus, *Pythium debaryanum*. This is of interest not only in demonstrating that a large percentage of damping off of seedlings, generally attributed to the *Pythium debaryanum*, is caused by this sterile fungus, *Rhizoctonia,* but also in affording an example of selection of food on the part of different fungi in producing a similar disease.

While there is no fruit form by which we can identify this fungus, there are certain characters of the mycelium by which one

can quite certainly recognize it. The mycelium is branched and septate, that is, divided into cells which are several times longer than broad, and are thus cylindrical. Wherever a branch arises from the mycelium the position of the first septum, or wall, in the branch is at some distance from the parent thread, and this small section of the branch is clavate in form. This is one of the important characters which aid us in identifying the mycelium of this sterile fungus.

In later stages of its growth the mycelium tends to form cords on *rhizomorphs*, by the union into a strand of a number of mycelium threads. These strands in years become brownish in color. There are also formed on these strands rounded enlargements about the size of a radish seed or bird shot. These are known as *sclerotia*. These are also brownish in color, though at first white and fluffy. On the surface of these *sclerotia* are very loose threads, and these are very characteristic in form. They are broader than the threads of mycelium, the cells are shorter, and strongly constricted at the walls, so that the threads are of a moniliform, or beaded, appearance. While these chains of elliptical or barrel shaped cells are not spores, they often separate, two or three remaining joined together, and may then function as spores. So in this way, while the fruit form, with spores, is unknown, bodies are formed which function as spores, and the *sclerotia* probably are a resting stage to tide the fungus over unfavorable periods.

Aside from diseases in the nature of damping off of seedlings, some serious diseases of older plants have been traced to the action of *Rhizoctonia*, especially of the beet and potato. In the case of the beet, (see Cornell University Bulletin 186), the fungus obtains a hold at the bases of the leaves. The leaf bases become blackened, and this is followed by the withering of the leaves. Then the fungus works into the crown of the beet, producing a browning of the tissues here, and later, cracks appear. The disease breaks out at isolated points in the beet field and spreads radially from these centres. This disease is best known in New York state. It has been found in Ohio, also in Iowa. It probably has a very wide distribution in this country, though it appears to be different from the *Rhizoctonia* disease of the beet in Europe.

In Europe a *Rhizoctonia* disease of the potato has long been known. During the summer and autumn *Rhizoctonia* has been found on the stems and tubers of potatoes in New York. (See Cornell University Bulletin 186.) Examination shows that it is very common on the tubers; at least it was during the autumn of 1900. The infected plants sometimes are covered with the *sclerotia*.

It is evident from these, and similar studies, that there is no cure for the diseases caused by wound parasites after once the fungus has entered through the wound into the interior of the tree. For a few years there may be no apparent injury but with the lapse of time the tree becomes badly injured if not destroyed. The trees may live for years, or even a century or more, with the fungus inside, still growing. They may be so weakened that they are broken down or uprooted during strong winds. Shade trees may be rendered unsightly, and lacking in density of foliage. Fruit trees may be rendered less fruitful, if not ultimately killed. Timber trees in a very few years may be so injured as to be worthless for the market.

In their relation to forestry these studies emphasize the desirability of careful and economical methods in the felling of timber to protect the young stand from injury, in the supply of light to the forest floor, and in the protection from fire. For while many forest fires may not be so severe as to kill the trees outright the fire often scorches exposed roots, or the base of trunks, where the leaves are thick, or by a dead and dry log or stump, thus affording an entrance for these wound parasites.

In the handling of fruit and shade trees there should be the greatest care from the nursery stock to the fruiting tree, to prevent wounds. In pruning operations especially should there be care in pruning smooth and close to the trunk, followed by the use of some antiseptic wash or paint. Perhaps no better example of the good effects of proper pruning of shade trees can be seen than in the suburbs and vicinity of this city of Boston. But all through the land there are still numerous examples of careless and ignorant methods which should be speedily consigned to the past.

The lecture was illustrated by stereopticon pictures which added much to its interest and value.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 23, 1901.

A meeting for Lecture and Discussion was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

The following lecture was delivered:

TWENTY YEARS' EXPERIENCE IN PEACH GROWING.

By JOHN W. CLARK, North Hadley.

The peach is a native of a warm climate. China and the United States are the only temperate climates where it comes to full perfection in the open air. Peach growing in the United States dates back nearly to the time of the first settlement, for, in 1633, we have account of peaches near Jamestown, Virginia, and peaches were the first commercial fruit grown in New Jersey. We also have accounts of fruit stones and kernels sent to Capt. John Endicott, Governor of Massachusetts Bay Colony, about 1629, among which were "Stones of all sorts of fruites, as peaches, plums, filberts, cherries," so we are safe in the conclusion that the peach was among the first fruits grown in this state.

Its cultivation however did not increase as rapidly in New England as it did further south, along the Delaware peninsula, where its growth was rapid,—so rapid in fact, that from this section the markets of the north and northeast have drawn the bulk of all their peaches until a very recent date. Up to about the year 1800 peaches flourished and orchards lived to a great age. There are accounts of old orchards throughout the peninsula, broken down and renewed perhaps a dozen times, that were healthy and bore good crops of fruit.

About the date given above (1800) a disease called the "yellows" appeared in the vicinity of Philadelphia, from where it spread north, south, east, and west, until it covered the whole peach area east of the Mississippi.

It is asserted that the yellows was not known in Massachusetts prior to 1837 and peaches were grown in the eastern part of the

state well into the fifties. After this the yellows became so destructive that the growing of peaches was practically given up for a time in this state. I can remember the old peach trees that grew back of my home in my childhood. This must have been toward the end of the fifties. After these old trees died out, the new ones planted were short-lived and I remember only two or three seasons when we had peaches, until the orchard that I planted in 1878 bore its first crop, in 1883, of about two thousand baskets. This, as far as I have been able to learn, was the first commercial crop of peaches of any considerable size ever grown in western Massachusetts, and it is from the impetus this modest crop of peaches, grown on Mount Warner, in North Hadley, in 1883, gave to the long discarded peach, that the revival of peach growing in Massachusetts dates. Connecticut which boasted a four million basket crop of peaches the past season, took her start from this same crop of fruit.

Whether the disease known as the yellows is contagious or not I will not pretend to say; but from its history and the way it acts I am strongly inclined to believe that it is. I think we have yet to learn just what it is and how it spreads. But one thing is plain to all successful peach growers: that when a peach tree ripens its fruit prematurely, the fruit being of a much higher color than healthy fruit of the same variety, and having a flat or bitter taste, the sooner all such trees are dug out by the roots and burned the better it will be for the owner. A tree in this condition can never be made to produce profitable crops of fruit. A new tree can be planted and brought to bearing age cheaper than a diseased tree can be nursed to a convalescent uselessness.

The best location for a peach orchard is on high ground above that of the surrounding country and having a good circulation of air. To show the importance of a high location let me state that in my orchard during the winter of 1898 — '99 the thermometer registered twenty degrees below zero on the morning of December 14th. At the foot of the orchard three-fourths of the peach buds were killed. Halfway up the hill fully one-half of the buds were alive, while at the top three-fourths of the buds were uninjured. The difference in temperature between the top and bottom of the

orchard was four degrees, it being colder at the bottom. The difference in elevation was about two hundred feet. The peach buds today show nearly the same difference at the different elevations.

The soil best suited to the peach is a well-drained sandy loam. A heavy and wet clay is the least suited.

In making choice of varieties of peaches to plant in Massachusetts hardiness of tree and bud should take a prominent place. For commercial orchards the early ripening varieties should not be planted, as they will ripen at the same time that the markets are supplied with the best of southern fruit. Mountain Rose is the earliest variety I would advise planting. Of the older varieties, Crawford's Early and Crawford's Late and Oldmixon seem to be the best. Of the newer sorts Elberta and Champion stand well to the front. If Elberta proves hardy it will be a profitable peach to grow. Some markets call for yellow fruit, while others want white, and varieties should be selected according to the market to be supplied.

Before planting the trees the ground should be ploughed and fitted the same as for corn or potatoes. The best distance to plant peaches where they are planted alone is probably from fifteen to eighteen feet apart each way. This will give from one hundred and fifty-four to one hundred and eighty trees to the acre. It has been my practice to plant peaches with apples, setting three peaches to one apple. I know many object to this and perhaps with reason, but my chief object has ever been to get an apple orchard, peaches taking second place. Others may think that more can be made with peaches alone, but in my case the one crop sold in 1883, six years from planting, paid for the land and all the expenses of the orchard to that time; so that the apple orchard six years old cost me nothing. The peach orchard I now have, planted in the same way ten years ago, has given three good crops of peaches, and today gives promise of a better crop than it has ever borne. This does not prove to me that I made a very great mistake in setting peaches with apples; and if planting an apple orchard where the soil and location were suited to peaches I should set peaches between the apple trees as in the past.

Peach trees should be pruned to a straight stem about two and

one-half feet high when planting, and by annual pruning kept moderately low in order to lessen the expense in thinning, gathering the fruit, and pruning the trees. The whole surface of the ground should be kept cultivated from early spring to midsummer, from the time the trees are planted until the orchard is given up, for if there is one fruit which needs thorough cultivation it is the peach. The trees should be thoroughly examined for borers in early summer and late fall. When there is danger of mice gnawing the trees in winter, I know of no better way to protect the trees than to bank with earth, removing it as soon as it can be done in the spring.

Where the soil is of average fertility and the surface is kept thoroughly cultivated, little, if any, fertilizer will be needed until the trees begin to bear, unless it seems advisable to sow a little on the surface of the ground near the trees at the time of planting. The best fertilizer for the peach, and in fact for all of our fruits, is potash and phosphoric acid, to which may be added a little nitrate of soda, if the trees are not making enough wood growth, but this should be used with care. When the trees are old enough to bear and there is promise of a crop of peaches, a liberal dressing of the fertilizers named should be applied early in spring and sown broadcast over the whole surface, using one thousand lbs. of fine ground bone or South Carolina rock phosphate and five hundred lbs. high grade sulphate of potash to the acre.

The fruit should be thinned as soon as the June drop is over leaving the fruit three or four inches apart, removing all small and imperfect specimens. Thinning increases the size of the fruit to such an extent that the yield is not materially lessened, if at all; and it also increases the price at which the fruit sells. The drain on the tree will be much less when seventy-five peaches fill a half-bushel basket than when it requires one hundred and fifty, and the price at which the larger fruit sells will be nearly double that of the smaller.

If spraying is practised in a proper manner good results will follow; but if done in a careless way injury will result from it. When spraying peaches only the lime and sulphate of copper mixture should be used, as there is no need of Paris green or

other poisons on the peach. The solution should not be stronger than four pounds of sulphate of copper, and five pounds of lime to fifty gallons of water. Spraying just before the buds open, then after the fruit has set, and again in two or three weeks will prevent spotting and cracking of the fruit and make it much larger. If the season is unusually favorable to fungus growth it may be advisable to spray again.

Varieties of the peach vary greatly in their ability to withstand extreme cold and many claim that seedlings are more hardy than budded fruit. This statement is too general; at least this has been my experience, for with me different seedlings have varied in regard to hardiness as much as have the varieties of budded fruit and I think that a hundred different kinds of each taken at random would show about the same average in hardiness. Every budded variety was once a seedling and its hardiness today is the same as when first grown as a seedling, provided it is in as healthy a condition. It is also claimed that varieties having large flowers are more hardy than those having small flowers; this, I think, is not founded on fact. The Oldmixon, which has very small flowers, is one of the most hardy of our peaches.

Without taking the time to discuss the different theories given to explain why peach buds are killed, the one that in my opinion comes nearest to the real cause is this: — from the time the leaves of a tree drop in the fall until they start in spring there is more or less circulation of the sap contained within the cells of the buds going on and depending on the temperature. The sap contained in a tree during its dormant state is more dense and contains less water than when the tree is growing. Each liquid has its freezing point and such as contain water expand in freezing. The less dense the sap or the more water it contains the easier will it freeze solid; and the more dense the sap the more cold it will take to freeze it solid. In freezing solid the expansion of the sap ruptures the cell walls of the fruit buds and they are killed. The killing of the buds can be detected after a severe cold night in a very short time if the buds are taken into a warm room and thawed out. Within an hour's time the centre of the buds will show a discolored appearance and will turn brown in a few hours. If the sap in the cells does not expand enough to

burst the walls or if the tissues are elastic enough to escape being ruptured, the bud is not injured. This, to me, is the most plausible explanation of peach buds being killed when the mercury is little, if any, below zero and of not being killed when the mercury drops to fifteen or twenty degrees below zero; and also why one variety will stand more cold without injury than another. It depends on the amount of water in the sap and elasticity of the cell walls.

From 1882, with the exception of four years, 1888-'92, I have kept a record of the temperature whenever the mercury went to zero, or below, and the condition of the peach buds at these dates. The results are shown in the following table:

Lowest Temperature of the Winter and Date when Buds were Injured.

Winter of	1882–'83; Jan. 23,	8° below.	Buds uninjured; good crop.
" "	1883–'84; Dec. 23,	23° "	Buds killed.
" "	1884–'85; Dec. 20,	18° "	" "
" "	1885–'86; Jan. 13,	14° "	" "
" "	1886–'87; Jan. 9,	22° "	All buds killed with exception of Oldmixon, and there were enough uninjured buds of this variety to give a full crop in the fall.
" "	1887–'88; Jan. 23,	22° "	All killed but Oldmixon.
" "	1892–'93; Jan. 17,	14° "	There was a good crop of fruit.
" "	1893–'94; Dec. 14,	14° "	All varieties except Crosby and Oldmixon badly injured, but these bore a good crop.
" "	1894–'95; Jan. 20,	12° "	A good crop of all kinds.
" "	1895–'96; Jan. 6,	14° "	All killed.
" "	1896–'97; Feb. 7,	17° "	All bore a good crop.
" "	1897–'98; Feb. 3,	22° "	Nearly all killed; small crop.
" "	1898–'99; Jan. 2,	25° "	Buds killed.
" "	1899–1900; Feb. 3,	14° "	One-third killed; good crop.
" "	1900–'01; Jan. 20,	14° "	One-half killed.

From this it will be seen that there were peaches when the thermometer registered 8, 22, 22, 14, 14, 12, 17, 22, 14 and 14 degrees below zero; and that the buds were killed when the thermometer went to 23, 18, 14, 14 and 25 degrees below zero.

One is often asked if it is not after the buds have started in early spring that they are most liable to be injured by the cold. At the south this is probably the case, but in Massachusetts I think it is not, for as far as my experience goes I have never had the fruit buds injured after Feb. 22nd. The nearest I ever came to having them killed after this date was the morning of the 10th of last May, when the thermometer stood at 20°. Peach buds were showing pink with a few flowers just open, but no injury was done. It has always been the severe cold of winter between Dec. 20th and Feb. 22nd that has destroyed the peach buds in my orchard.

That peaches can be grown in this state is an established fact, but I do not think that it will ever become what is called a peach state. Our winters are too cold and it will be only those who have a good location on high ground suited to the peach, who have a natural love for trees and fruit, and who will not get discouraged and give up when the mercury drops to 20° or more below zero, destroying the crop year after year, that will make the growing of peaches profitable. As I look back to the time when I grew my first peaches I fail to remember one person in my locality, among the many who were induced to plant peach trees by my success, that has not made a failure of peach-growing; and of those who plant peaches in this state I doubt if one in ten will make it pay. I believe in growing peaches in Massachusetts myself but do not believe in it for the majority, and although I am ready to put money into it if I can look after the trees myself I would not risk one cent in peaches if another was to care for the orchard.

Discussion.

The lecturer did not think that Massachusetts would ever raise enough peaches to make it worth while to have a law in regard to yellows. They might have a law to prevent plum wart. Much of the unhealthy condition of peach trees is due to borers and poor culture. One well acquainted with the yellows can distinguish this disease from the effects of borers.

The Crawford's Late peach is too late for some localities in New England, but where it is not it is a most desirable kind.

You want a good healthy growth of well ripened wood; if your trees go into the winter without having the wood ripened they will be more liable to be killed.

The lecturer thought ground South Carolina rock as good as ground bone. The experience of Dr. Fisher at Fitchburg, and the Agricultural College at Amherst is the same. Paris green is liable to injure the foliage; the foliage of the peach is very sensitive. As much harm as good has thus far been done by spraying peaches.

In Worcester it is reported that the buds are all killed. The lecturer thought there will be but a small crop this year.

Plant peaches on high land. They will not pay at the foot of a hill. Fifty years ago the State Board of Agriculture reported that peaches could not be grown as well as they were fifty years earlier.

People had called the lecturer foolish to plant peach trees, but while valuation generally has decreased, his land has increased fourfold. He thought our New England hills, fairly well situated, can be put to no better use than growing apples. It takes eight or ten years to get an apple orchard into bearing, and if you plant peach trees between the rows you can get a better start.

William C. Strong said he found the lecture very interesting and very instructive, but very discouraging. He has visited Mr. Thurlow's peach orchard and found his peaches as fine and luscious as any he ever tasted. He still believes we shall be able to raise fine peaches. Those raised in Massachusetts are better in quality than any brought into the state. At a meeting of the American Pomological Society two years ago he heard the statement that Mr. Morrill of Benton Harbor, Mich., got six thousand dollars for his crop of peaches when all others around him failed. He cultivated very thoroughly until the middle of August. He then sowed oats and allowed them to die down and cover the ground in winter. In the spring they were worked into the ground. The speaker said that he has great faith that some discovery will be made by which we may be able to grow peaches.

The lecturer said that the season at Mr. Morrill's was very unusual. He kept his orchard thoroughly cultivated; he went over it every other day. This retained the moisture of the ground, but it had nothing to do with the hardiness of the trees.

Only men who have a good location and who are born with a love for the business will succeed.

B. W. Barnard, of Grand Rapids, Mich., said that he has an orchard in Michigan in the same latitude as Boston. He has one orchard of three thousand trees and one of four hundred. He cultivates early in the season and ceases in July. One orchard was not cultivated the previous year and the buds went into winter in good condition. In the spring he had a branch examined and found the wood cells about one-third destroyed. If early cultivation is looked after the trees will bear even though the mercury has been as low as thirty degrees below zero.

The lecturer said he had come to the same conclusion in regard to the wood cells, and was glad to hear the same view expressed by some one else. With a cover crop mice are very liable to injure the trees. He does not grow clover in his orchard when there is a crop of fruit, for the trees need all the moisture in the ground. In a season when the trees do not bear he would sow clover or some other crop. You don't want to stop cultivation too soon; if you ripen the wood too soon the buds will start into late growth. It is a delicate question just when to stop. Late summer is a safe time. Get the trees in good condition to go through the winter. Mr. Barnard said that eighteen degrees below zero will kill buds in Michigan.

A lady inquired about spraying with whitewash and the lecturer replied that it keeps the wood cold, which is desirable in the south, but not here. We want to keep it warm. He would plant on high ground where there is a good circulation of air. One year when the fall was warm the buds started. That year the buds were killed at six degrees below zero. Buds are not so likely to be injured when covered with frost.

Varnum Frost had seen hundreds and hundreds of acres set out with peach trees which have all been failures. Many have used spraying mixtures on part of an orchard and have been unable to see any difference. So much science has got into agriculture that it is extremely difficult to raise anything. When he was a boy peach trees were as healthy as forest trees. He thinks so many chemicals have been introduced into the soil that it is upset and discouraged.

The President said he knew little about the yellows until 1840. Before that, peach trees might live to be fifty years old. In late years he has practised growing peaches from stones, getting the stones from a section where the yellows did not exist. Seedling trees would be no better than budded trees if the seed was unhealthy. Get stones from below Virginia or from California and you will have better success. He thinks that each fruit is endowed with a natural term of life, and if continued beyond that the trees are less healthy. The hardest work he ever had in farming was to sell his peach crop about 1850. He went into the market at eight in the morning and had to back up under a gas light till ten at night to sell a load. The lower rows in his orchard near a brook never bore fruit, while from those higher up there was a good crop. He agreed with the lecturer that raising peaches in Massachusetts is uncertain.

Samuel H. Warren said his father had a peach orchard which produced a good crop that sold at fair prices. One tree appeared to be a new early variety and he thought it would be a good plan to take scions from it. In a year or two the trees were all dead from the yellows.

Mr. Frost has a friend in Fitchburg who has a peach orchard of five thousand trees. He buys trees and sets them in grass land. Every fall he buys a hundred tons of hay and puts some around every tree. He winds tarred paper around the trunks to prevent the mice from gnawing and has never been troubled by them. He cuts the tops of trees off when he buys them and rubs off every eye except the low ones. He has his crop near the ground.

The lecturer said that cultivating and mulching amount to the same thing; he means shallow cultivation. Plough very shallow near the trees. Use a cutaway harrow if you begin early in the season. You may begin before the frost is out of the ground. The cutaway harrow does not work well on a hillside. With a spring tooth harrow you can keep the ground level.

Apple trees will do well in newly cleared land and peach trees also, only the work will be greater.

Jacob W. Manning said that in 1853 he gathered eight bushels of Crawford's Late peaches in Burlington and sold them in Boston for $32.00. Twenty thousand bushels were raised one year in Billerica but few were sold. The peach rot came in 1860.

MEETING FOR LECTURE AND DISCUSSION.

SATURDAY, March 30, 1901.

A meeting for Lecture and Discussion was holden at eleven o'clock today, Vice-President BENJAMIN P. WARE presiding.

The Committee on Lectures and Publication regret that they are unable to present more than the following abstract, prepared by the author, of the lecture delivered.

INSECTS INJURIOUS TO FRUITS AND VEGETABLES.

BY PROFESSOR H. T. FERNALD, Agricultural College, Amherst.

The lecturer stated that destructive attacks by insects were nothing new, being graphically described in several places in the Bible. During the last century, however, the injuries caused by insects had become more frequent and serious, the reason for which was due to several causes, the first and probably the most important of these being the introduction of injurious forms from other countries. More than seventy of our worst pests of the present day have been introduced from abroad and it is a noticeable fact that their work in this country is more destructive than in their native land. Modern methods of agriculture are also responsible for a portion of the increased loss, the modern tendency to a concentration of crops being distinctly favorable to the rapid multiplication and spread of the insects which feed upon them, while, finally, the great reduction in numbers of our insectivorous birds has removed one of the most efficient means for holding destructive insects in check. He then went on to speak of the scale insects as affecting fruit trees in this country, illustrating his remarks with lantern slide views of the insects described. The oyster-shell scale was shown and its life history briefly sketched. The lecturer stated that it was introduced from Europe during the latter part of the 18th century and is now generally distributed over the country, and while not usually destroying fruit trees is nevertheless very injurious to them. The scurfy scale was also treated of in a similar manner and a

slide showing where parasites had been at work destroying it was put upon the screen. The lecturer next took up the San José scale which, he stated, was by far the most serious scale with which we have to contend at the present time. He further said that it is in all probability a native of Japan and was first discovered in this country in California about 1870. Its life history was fully described and pictures showing its ravages were put upon the screen as was also a map of Massachusetts showing thirty-eight localities where the scale is now known to occur. The speaker stated that during the summer of 1900 he had received currants, pears, and apples so badly affected by this insect as to render them unsalable, these specimens all coming from places within fifty miles of Boston. The best treatment advisable for the oyster-shell and scurfy scales is to spray affected trees twice with kerosene emulsion or with a 10 per cent mechanical mixture of kerosene and water,—once about the 10th of June and again about the 25th of that month. For the San José scale, however, this treatment would be quite ineffective because of its different life history. For this insect the fumigation of all nursery stock before shipment was strongly urged and purchasers of fruit stock were advised to require a certificate of inspection and freedom from the scale with every lot bought, taking due care to note that the date of inspection is within a year of the date of purchase. Fumigation, however, was not recommended for general use because of its expense and the apparatus necessary, but whale-oil soap was suggested in its place, the most successful formula for its preparation being given. The speaker said that if the San José scale increased during the next ten years as rapidly as it had during the last five in this State, it would become a serious question whether any fruit at all could be raised in Massachusetts, and that if they wished to save their orchards the fruit growers of the State would find it necessary to give this insect much attention.

The lecturer then took up the asparagus beetle as an insect causing much trouble to market gardeners and sketched its life history and the best means for destroying it, for which purpose he recommended arsenate of lead. This was followed by a description of the cabbage worm which he said was, in spite of

nearly fifty years' experience with it, one of the most difficult cabbage insects to control. For that purpose he recommended the use of Paris green, explaining why any danger in the use of this insecticide was more apparent than real and stating his experience in its use, and also the practice of the large market gardeners around Philadelphia where this treatment has been followed for fifteen years with excellent results. He closed by urging a more careful study of the insects injurious to crops, stating that the annual loss from this cause was over $300,000,000 each year in the United States and that only a small part of this loss is unavoidable.

The lecture was illustrated throughout by lantern slides.

Discussion.

Hon. Virgil C. Gilman asked whether scraping the bark of apple and peach trees on or before the first of June would destroy scales on the bark.

The lecturer said that the best time to scrape trees is during the winter but this is difficult and ineffectual. Spraying is cheaper and better. Scales on nursery stock and other young trees are found down to the ground, but as the bark grows thicker the old ones retreat.

The Chairman said that ten years ago the orange trees in California were infested with an injurious scale but a parasite has been introduced which has kept the scale in check.

The lecturer said that the scale on orange trees in California is not the San José but one that came from Australia. The San José scale multiplies more rapidly. The lady bird feeds on the San José scale and is a great help to orchard men, but we cannot hope that it will exterminate the San José scale because the latter increases so much more rapidly. The United States Department of Agriculture has sent an agent to Japan to learn what keeps this pernicious scale in check in that country. The tent caterpillar has been known for many years and has never been exterminated, but we have to fight it every year and we have learned that it can be kept down, and we must do the same with the San José scale. There is a possibility of controlling it, but not of exterminating it. The lecturer said that he was called upon to inspect a nursery

in another state, and that he refused a certificate of freedom from the San José scale. The owner sighed and said that he would send the trees to Massachusetts, where there is no law to prevent the introduction of the San José scale.

Varnum Frost said that the experiment stations had cost a good deal of money, and asked if there had ever been an insect during the last hundred years which had destroyed a crop so that there was not enough left to supply the wants of the people. The cabbage worm is a recent introduction, but cabbages are grown in the suburbs of Boston as well as ever. He regarded injurious insects as beneficial by stirring up cultivators to attend to their crops.

The lecturer said that it was impossible to take up all sides of the question in the time allotted to him. Except for insects human life on the earth would be ended in five years. There are good insects and bad insects, as there are good people and bad people. He had not attempted to develop a scare, but had simply stated what had occurred in other states but had not reached Massachusetts because it is so far north. His work was that of forewarning, and the map shows that the pest has already come. It is the people who have it who are making the outcry. Mr. Frost's view in regard to the benefit of insects may be correct, but they are not an unmixed benefit.

The Chairman said that asparagus is fit to cut in forty-eight hours from the previous cutting so that the eggs of the asparagus beetle do not have time to hatch.

The lecturer said that the eggs mentioned require four or five days to hatch, and if the asparagus is cut clean every forty-eight hours there is not time for them to hatch. When cutting ceases and the seed stalks grow up the beetles have their opportunity. Every farmer seems to have some neighbor who is not a good farmer to propagate insects for him.

At the suggestion of the Chairman a vote of thanks to the lecturer was unanimously passed.

CONTENTS.

PAGE

PREFATORY NOTE 3

BUSINESS MEETING, Jan. 5, 1901; Remarks of Vice-President Ware, introducing the President-elect, p. 5; President's Address, 6-10; Memorial of William Saunders, 11, 12; Report of Committee on Revision on Constitution, etc., presented, 12; action postponed, 13; Appropriations for 1901, 13, 14; Appointment of Treasurer, Secretary, etc., 14; Vote of thanks to Messrs. Kelway & Son, 14; Letters from F. H. Appleton and A. F. Estabrook, presenting vases, 14; Offer by Mrs. Sears of money for Prizes for Seedling Carnations, 14; Letter from William A. Taylor, Secretary of the American Pomological Society, read, 14; Reports of Committee on Lectures and Publication, and of Secretary and Librarian presented 14

MEETING FOR LECTURE AND DISCUSSION, Jan. 12; Evergreens for Winter Effect, by J. Woodward Manning, (Illustrated) 15-27

MEETING FOR LECTURE AND DISCUSSION, Jan. 19; The Trees of Our Neighborhood, by Miss Emma G. Cummings, pp. 28-40; Discussion . . 40-42

MEETING FOR LECTURE AND DISCUSSION, Jan. 26; A Visit to Kew Gardens and Hampton Court, by Benjamin P. Ware 42-49

BUSINESS MEETING, Feb. 2; Report of Committee on School Gardens, etc., presented, p. 50; Exhibitions to be omitted, 50; Letters from C. S. Sargent and William J. Stewart relative to time of opening new hall read, 50; Report of Sub-Committee on Meeting of the American Pomological Society, 50; Use of Society's Halls offered to Co-operative Flower Growers' Association, 51; Committee to procure portrait of Ex-President Appleton appointed, 51; Letter from Trustees of Paddock Building presenting statues and box in corner stone, and vote concerning marble tablets, 51; Six members elected 51

MEETING FOR LECTURE AND DISCUSSION, Feb. 9; Growing and Exhibiting Vegetables and Fruits, by Herbert R. Kinney, pp. 52-60; Discussion . 60-62

MEETING FOR LECTURE AND DISCUSSION, Feb. 16; The Advancement of Market Gardening in the Past Twenty-five Years, by Michael Sullivan, pp. 63-71; Discussion 71-74

MEETING FOR LECTURE AND DISCUSSION, Feb. 23; A Quarter Century's Evolution in American Horticulture, by Patrick O'Mara, pp. 74-88; Discussion . . . . . , 89

PAGE

BUSINESS MEETING, March 2; Thanks of Co-operative Flower Growers' Association reported, p. 90; Letter from Trustees of Paddock Building presenting marble tablets read, 90; Committee on Publication authorized to print Treasurer's Report as soon as approved, 90; Building Committee to take charge of removal of statues and tablets, 90; Library Committee authorized to remove library and library furniture and Superintendent to have charge of removal of other property, 90; Vote concerning condensed statements of Reports of Standing Committees. 90; Decease of Edwin C. Lewis announced, 90; and of Augustus Parker, 91; Decease of H. W. S. Cleveland announced, with remarks by the Secretary, and Vote of the Society, 91; Action in regard to death of John Galvin, 91; Three members elected 91

MEETING FOR LECTURE AND DISCUSSION, March 9; Fruit Growing in New England and its Development During the Last Fifty Years, by Hon. Aaron Low, pp. 92-104; Discussion 104-109

MEETING FOR LECTURE AND DISCUSSION, March 16; Studies of Some Tree-destroying Fungi, by Prof. George F. Atkinson 109-130

MEETING FOR LECTURE AND DISCUSSION, March 23; Twenty Years' Experience in Peach Growing, by John W. Clark, pp. 131 137; Discussion . 137-140

MEETING FOR LECTURE AND DISCUSSION, March 30; Insects Injurious to Fruits and Vegetables, by Prof. H. T. Fernald, pp. 141-143; Discussion 143, 144

EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California — Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive.

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletins 1, 3, and 5. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25, and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

New Jersey.— Bulletins 1, 4, 5, 15, 27, and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd. for 1882-83 (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, and 69, 2d ed. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (*68b*). Special Bulletins 1 (*77a*) and 4 (*82a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18, and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883, and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report, for 1898-99.

Washington. — 6th, 7th, and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9, and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).

TRANSACTIONS

OF THE

Massachusetts Horticultural Society

FOR THE YEAR 1901.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY,
1902.

☞ SEE LAST PAGE OF COVER.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society,

FOR THE YEAR 1901.

PART II.

BOSTON:
PRINTED FOR THE SOCIETY.
1902.

The New Horticultural Hall: Erected A. D. 1900.

TRANSACTIONS

OF THE

Massachusetts Horticultural Society.

BUSINESS MEETING.

Saturday, April 6, 1901.

A duly notified stated meeting of the Society was holden at eleven o'clock today, the President, O. B. Hadwen, in the chair.

Ex-President William H. Spooner reported the following memorial of the late Augustus Parker, which was unanimously adopted :

Mr. Augustus Parker of Roxbury, a member of this Society, died on the 27th of February, at the age of seventy-four.

My first acquaintance with Mr. Parker was about the year 1856, when he was engaged in the coal business, but his predominating taste was for farming, for which he had an early training and to which he subsequently turned his entire attention.

His farm was a portion of the Seaver estate near Grove Hall, and he managed it skilfully, making its products desirable to many purchasers.

His grandfather, Hon. Nathaniel Seaver, with whom he lived from early childhood, brought scions of the Seckel pear from Washington (while a member of Congress) with which he grafted a tree standing on the old place on Blue Hill Avenue.

Mr. Parker continued farming until the growing demand on his lands for residential purposes induced him to sell.

He was much interested in local history and genealogical research.

He became a member of the City Council of Boston in 1875, and was a member of the Board of Overseers of the Poor from 1878 to 1880.

He was elected a corporator of the Franklin Savings Bank in January, 1877; also a trustee and member of the Board of Investment, and later Vice-President, and succeeded Hon. F. W. Lincoln as President in February, 1898.

He was elected a member of this Society in 1849, and was a Vice-President in 1893, '94, '95, and '96.

The Committee on Lectures and Publication reported a deficiency of five dollars in the appropriation for their use, and asked for an additional appropriation of that amount, which was voted, subject to the approval of the Executive Committee.

The Secretary read a letter from the Secretary of the Society of American Florists, stating that one Silver and one Bronze Medal had been appropriated by that Society to be awarded through the Massachusetts Horticultural Society, at one of their regular public exhibitions, for new and meritorious plants of American origin, but only to such exhibits as are considered worthy of such an award.

The offer was accepted and the thanks of the Society were voted therefor and the communication was referred to the Committee on Prizes to be put in proper form.

Henry L. Clapp, Chairman of the Committee on School Gardens and Children's Herbariums, stated that that Committee were unable to attend to the work of awarding prizes for Native Plants, and offered the following vote :—

Voted, That the work of judging native plants and awarding prizes therefor be referred back to the Society for reassignment to some other Committee now existing, or to some committee who may be hereafter appointed.

H. L. Clapp, *for the Committee on School Gardens and Children's Herbariums.*

This vote was laid on the table, and the subject was referred to a Committee consisting of Mr. Clapp, Charles B. Travis, and Mrs. H. L. T. Wolcott to consider and report upon.

The President reported the following recommendation from the Executive Committee, —

Recommendation to the Society,

Voted, That the consideration of the ultimate disposition of the statues now on the outside of the present building be postponed for the present, and that the removal of them and their temporary deposit be left to Mr. Wheelwright, the architect, and the Building Committee, with full powers.

This recommendation was adopted.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

Peter Fisher, of Ellis,
Miss Abby A. Bradley, of Hingham,
Miss Mary F. Bartlett, of Boston.

On recommendation of the Executive Committee

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y., and
Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia,

were elected Corresponding Members of the Society.

The meeting adjourned to Saturday, May 4, at such place as might be provided.

BUSINESS MEETING.

Saturday, May 4, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, at No. 227 Tremont Building, Boston, the President, O. B. Hadwen, in the chair.

The following vote offered by the Treasurer was passed:

Voted, That the rate of interest to be credited annually to the J. D. Williams French Fund, for the purchase of books for the Library, be at the rate of four per cent.

A letter from William Wallace Lunt, Chairman of the Committee on Plants, resigning that position on account of business engagements, was read. It was voted that Mr. Lunt's resignation be accepted, with regret that he feels it necessary.

On motion of Ex-President William H. Spooner it was

Voted, That the Committee on Plants be authorized to recommend candidates to fill the vacancies in the Committee and in the Chairmanship.

The President, as Chairman of the Executive Committee, reported that that Committee had approved the appropriation of five dollars voted by the Society at the April meeting to cover the deficiency in the appropriation for the Committee on Lectures and Publication.

Henry L. Clapp, Chairman of the Committee to consider the subject of awarding prizes for native plants, made a report which was accepted, and on motion of William H. Spooner it was voted that Charles W. Jenks be a Committee to award prizes and gratuities for native plants with the liberty to call in the assistance of such experts as he may desire.

A letter was received from W. Prentiss Parker, acknowledging, in behalf of his mother and sisters, as well as himself, their grateful appreciation of the memorial of the late Augustus Parker adopted by the Society.

A circular was received from the President and Secretary of the American Pomological Society, with the information that the Twenty-Seventh Biennial Session of that Society will be held at Buffalo, N. Y., on the 12th and 13th of September, and inviting the attendance of delegates and the contribution of fruits to the exhibition, and additions to the membership of the Society.

A letter was received from George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y., acknowledging receipt of the information of his election as Corresponding Member of this Society, and expressing his appreciation of the honor conferred upon him.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected :

THOMAS E. PROCTOR, of Boston,
MISS MARY D. BATES, of Ipswich,
MRS. AUGUSTUS P. GARDNER, of Hamilton.

Adjourned to Saturday, June 1.

BUSINESS MEETING.

SATURDAY, June 1, 1901.

The meeting of the Society on the 4th of May adjourned to today, but there was no quorum present and the meeting was dissolved.

BUSINESS MEETING.

SATURDAY, July 6, 1901.

A duly notified stated meeting of the Society was holden at eleven o'clock today, the President, O. B. HADWEN, in the chair.

A report was received from the Committee on Plants, nominating Arthur H. Fewkes for Chairman, and Robert Melrose Grey to fill the vacancy on the Committee, and these gentlemen were unanimously elected.

The Secretary announced the receipt of a letter from Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, acknowledging his election as a Corresponding Member of this Society, and thanking the Society therefor; also a letter from Ralph D. Cleveland of Hinsdale, Illinois, acknowledging with thanks the expression by the Society of respect and esteem for his father, the late H. W. S. Cleveland.

The question of holding or omitting the weekly summer exhibitions of the Society was brought up, and after full discussion it

was voted to omit all exhibitions until the Annual Plant and Flower Show on the 4th and 5th of September.

On motion of Henry L. Clapp it was unanimously voted that this Society endorse the object of the Society for the Protection of Native Plants.

William C. Strong stated the arrangements made for the meeting of the American Pomological Society at Buffalo, N. Y., on the 12th and 13th of September, and urged the attendance of as many members as could make it practicable to visit that and the Pan-American Exposition. It was voted that the Secretary receive the names of such members as would attend as delegates, and that he also notify members of the opportunity.

Joseph H. Woodford, from the Committee to prepare a memorial of the late Edwin C. Lewis of Taunton, made a report which was unanimously accepted, and it was voted that it be entered on the records of the Society, and that a copy be sent to the family of Mr. Lewis.

The following is the memorial :—

Whereas, we have learned with great sorrow that our friend and fellow member of our Society, Edwin C. Lewis of Taunton, has been taken away from us by death, we desire to record our deep sense of the loss we have sustained; therefore be it resolved, that in his decease we recognize the passing away of a man of admirable character, whose nature was strongly marked by the qualities of earnestness, sincerity, good faith to his employer, kindliness of soul and geniality of disposition; and be it further resolved, that in his long and successful career as a tiller of the soil he always illustrated the best type of a gardener and farmer, and that the example which he has set of fidelity to his calling is one we may desire to emulate; and be it further resolved, that our heartfelt sympathy be extended to his family and friends, and that a copy of these resolutions be spread on the records of our Society, and be transmitted to his bereaved family.

WARREN H. HEUSTIS,
PATRICK NORTON,
J. H. WOODFORD. } *Committee.*

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

Albert L. Murdock, of Boston,
Loring Underwood, of Belmont,
Sylvester Tower, of Boston,
Miss C. M. Walker, of Boston,
Josiah B. Shurtleff, Jr., of Revere,
Mrs. Helen M. Tower, of Cambridge,
Alfred Richard Cross, of Nantasket.

Adjourned to Saturday, August 3.

BUSINESS MEETING.

Saturday, August 3, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. Hadwen, in the chair.

Agreeably to the Constitution and By-Laws the President appointed the following named members a Committee to nominate candidates for Officers and Standing Committees for the year 1902:

William C. Strong, *Chairman*,

William H. Spooner,	Patrick Norton,
Francis H. Appleton,	Benjamin C. Clark,
Benjamin P. Ware,	Mrs. E. M. Gill.

The Secretary read a letter from N. L. Britton, Ph. D., Chairman of the Council of the Horticultural Society of New York, inviting this Society to participate in an International Conference on Plant Breeding and Hybridization during the year 1902, probably during the month of September. It was voted to accept the invitation.

The Secretary also read a letter from Mrs. Jane Lewis, thanking the Society, on behalf of herself and her family, for its expression of sympathy in the loss of her husband, the late Edwin C. Lewis.

Adjourned to Saturday, September 7.

BUSINESS MEETING.

SATURDAY, September 7, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today. In the absence of the President and all the Vice-Presidents, Ex-President SPOONER was called to the chair.

Ex-President William C. Strong, Chairman of the Committee to nominate candidates for Officers and Standing Committees of the Society for the year 1902, reported a printed list, which was accepted. The Committee was continued and requested to nominate candidates in place of any who might decline before the election.

Mr. Strong also reported the following list of delegates to the Twenty-Seventh Biennial Session of the American Pomological Society, to be held in Buffalo, N. Y., September 12th and 13th:

The President, O. B. HADWEN, *Chairman*,

WILLIAM C. STRONG,
BENJAMIN P. WARE,
JAMES H. CLAPP,
JACOB W. MANNING,
THOMAS C. THURLOW,
EDWARD B. WILDER,
AARON LOW,
PATRICK NORTON,
E. W. WOOD,
CHARLES F. CURTIS,
WILLIAM H. SPOONER,
WARREN FENNO,
J. WILLARD HILL,
JOHN L. BIRD,
FREDERICK W. DAMON,
CHARLES B. TRAVIS,
JAMES H. BOWDITCH,
HENRY W. WILSON,
ARTHUR H. FEWKES.

The report was accepted and it was voted that the Secretary be authorized to add to the list the names of any other members who would like to go as delegates.

After considerable discussion as to whether the new building would be accepted by the Society in time to hold the Annual Election, which occurs on the 5th of October, it was

Voted, That the Treasurer shall have full power, in case the new hall in not in readiness to hold the Annual Election, to provide another suitable place to hold the election.

It was also *Voted*, That the Superintendent of the Building and the Librarian be instructed not to remove any of the personal

property of the Society into the new building until they have received written instruction to do so from the Building Committee.

The meeting then adjourned to Saturday, the 14th instant.

BUSINESS MEETING.

SATURDAY, September 14, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. HADWEN, in the chair.

Certain legal questions connected with the care and drainage of the alleyway between the land of the Society on Huntington Avenue and that of the Proprietors of Chickering Hall, were brought before the meeting and it was

Voted, That when the Society adjourns it be to Saturday next, the twenty-first instant, at eleven o'clock, for the consideration and decision of these questions, and that notice be given by postal card to every member of the Society of the meeting and its purpose.

It was also *Voted*, That the Building Committee be requested to present their report at the meeting on Saturday next, and that the subject of the acceptance of the new building be then acted upon.

Ex-President Francis H. Appleton was appointed a Committee to prepare a memorial of the late George A. Nickerson.

The meeting then adjourned to Saturday, September 21, at eleven o'clock.

BUSINESS MEETING.

SATURDAY, September 21, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock. Notice of the meeting had been giving by mailing a postal card to every member. The chair was occupied by the President, O. B. HADWEN.

Francis H. Appleton, Chairman of the Building Committee, read the draft of an agreement between the Society, and William H. Hill, R. Stuart Chase, and Charles H. W. Foster, Trustees under the will of William H. Hill, and offered the following vote:

Voted, To authorize the Treasurer of the Massachusetts Horticultural Society to execute in the name of the Society an agreement between it and William H. Hill, R. Stuart Chase, and Charles H. W. Foster, Trustees under the will of William H. Hill, in regard to the use and maintenance of the passageway created for the benefit of the estates of the two parties to the agreement and to cause the corporate seal of the Society to be affixed thereto.

The passage of this vote was moved by Ex-President William C. Strong, and seconded by William H. Spooner, and after full consideration it was passed by a unanimous vote in the affirmative.

The Chairman of the Building Committee then read the report of that Committee, and presented the following vote and moved its passage:

Voted, That the Society accepts the new building on Massachusetts Avenue, with the provision that the contractor shall not be given formal acceptance until the Society's interests can be fully protected.

This motion was seconded by William H. Spooner and discussed by Mr. Strong, Mr. Spooner, and the President of the Society, inquiries being answered by the Chairman of the Building Committee, and carried in the affirmative.

The meeting was then dissolved.

BUSINESS MEETING.

SATURDAY, October 5, 1901.

A Stated Meeting of the Society, being the Annual Meeting for the choice of Officers and Standing Committees, was held * at eleven o'clock today, the President, O. B. HADWEN, in the chair.

The Secretary stated that the notice of this meeting required by the Constitution and By-Laws had been duly given.

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* At Wesleyan Hall, Bromfield Street.—Ed.

On motion of Edwin H. Jose, duly seconded, it was voted that the Report of the Committee on the Revision of the Constitution and By-Laws, presented at the Stated Meeting on the fifth of January and then postponed to this meeting, be taken up.

Theodore H. Tyndale moved that the Committee on the Revision of the Constitution and By-Laws be discharged, and that the consideration of their Report be indefinitely postponed. This motion was duly seconded and carried.

Joseph H. Woodford moved the reconsideration of the last vote. This motion was duly seconded and reconsideration was refused.

The President here retired and called to the chair Vice-President Benjamin P. Ware.

Ex-President William C. Strong reported from the Executive Committee a recommendation that the opening of the New Hall be celebrated by an address or addresses during the coming Chrysanthemum Show. The report was accepted, and the President and Ex-Presidents Strong and Spooner were appointed a Committee to make arrangements for the celebration.

The President, as Chairman of the Executive Committee, presented a report from that Committee, recommending the appropriation of $6,000 to cover the deficiency in the amount previously appropriated for the Building Committee. This appropriation was voted.

Agreeably to the Constitution and By-Laws the Chair appointed Hon. Aaron Low, Charles W. Jenks, and Edwin A. Hall, a Committee to receive, assort and count the votes given for Officers and Standing Committees for the year 1902, and report the number. The polls were opened at a quarter past eleven o'clock.

Charles E. Richardson, Treasurer, moved the following vote:

Voted, That the Treasurer be, and he hereby is, authorized to execute, in the name of the Massachusetts Horticultural Society, an agreement between it and William H. Hill, R. Stuart Chase and Charles H. W. Foster, Trustees under the will of William H. Hill, in regard to the use and maintenance of the passageway created for the benefit of the two parties to this agreement, and to cause the corporate seal of the Society to be affixed thereto.

The vote was passed in the affirmative.

The following named persons, having been recommended by the Executive Committee for membership in the Society, were on ballot duly elected:

Henry Bigelow Williams, of Boston,
Miss Ella F. Hildreth, of Lowell,
Miss Mary Alma Coe, of Boston.

The polls were closed at quarter past one o'clock, and the Committee to receive, assort and count the votes given, and report their number, reported that the whole number of ballots cast was ninety-one, and that the persons named on the ticket presented by the Nominating Committee had a plurality of votes and were elected, except that Arthur F. Estabrook was elected a member of the Finance Committee in place of Charles S. Sargent.

The report was accepted, and the persons reported by the Committee as elected were, agreeably to the Constitution and By-Laws, declared by the presiding officer to have a plurality of votes, and to be elected Officers and Standing Committees of the Society for the year 1902.

Adjourned to Saturday, November 2.

BUSINESS MEETING.

Saturday, November 2, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. Hadwen, in the chair.

The President, as Chairman of the Executive Committee, reported from that Committee a recommendation that the Society appropriate the following named sums for Prizes for the year 1902:

For Plants	$1,750.00
" Flowers	2,187.00
" Native Plants	153.00
" Fruits	1,487.00
" Vegetables	1,050.00
" Gardens	438.00
Total	$7,065.00

These amounts being twelve and one-half per cent less * than those appropriated for the year 1901.

The President further reported from the same Committee a recommendation that the Society appropriate $250 for the Committee on Lectures and Publication for the year 1902, this sum to include the income of $50 from the John Lewis Russell Fund.

The report was accepted, and, agreeably to the Constitution and By-Laws, laid over until the Stated Meeting on the first Saturday in January.

It was voted that any further furnishing of the Library Room, with either bookcases or other furniture, be entrusted to the Library Committee.

On motion of Ex-President William H. Spooner it was voted that the Building Committee be requested to furnish a detailed statement of the cost of the new building.

Grenville T. W. Braman of North Cohasset, having been recommended by the Executive Committee for membership in the Society, was on ballot duly elected.

Adjourned to Saturday, December 7.

BUSINESS MEETING.

Saturday, December 7, 1901.

An adjourned meeting of the Society was holden at eleven o'clock today, the President, O. B. Hadwen, in the chair.

In the absence of the Secretary by reason of illness, Miss Charlotte M. Endicott was appointed Secretary *pro tem.*

Warren H. Heustis, Chairman of the Committee on Vegetables, read the Annual Report of that Committee.

The report of J. Woodward Manning, as Chairman of the Committee on Flowers, was read by the Secretary *pro tem.*

*This reduction was later restored on recommendation of the Executive Committee, making the appropriation for 1902, $8,075.—Ed.

Arthur H. Fewkes, Chairman of the Committee on Plants, read the Annual Report of that Committee.

William E. Endicott, Chairman of the Committee on the Library, read the Annual Report of that Committee.

These reports were severally accepted and referred to the Committee on Publication.

The Schedule of Prizes for the year 1902 was reported by William H. Elliott, Chairman of the Committee on Establishing Prizes, accepted, and referred to the Committee on Publication. A printed statement of the changes from the Schedule of 1901 was also presented.

William H. Spooner moved that when the meeting adjourned it should be for two weeks, in order that Committees which had not yet presented their reports be given further opportunity in which to read them. This motion was carried.

Patrick Norton, Chairman of the Committee on Gardens, announced that the report of that Committee would be presented at the next meeting.

William C. Strong presented the following memorial of Thomas Meehan :

It is with deep regret that the Massachusetts Horticultural Society learns of the death of Thomas Meehan, of Philadelphia, on the 19th of November last. For nearly half a century our members have had constant fellowship with him in the various departments of horticulture in which he distinguished himself. He first became known to us as a nurseryman, the late William Saunders being his partner, until his transfer by the United States Government.

Subsequently Mr. Meehan was the sole proprietor of one of the most varied and extensive nurseries in the United States, bringing his sons into training in the latter years of his life.

In addition to the vast amount of care involved in this enterprise he early took upon himself the founding of the "Gardener's Monthly," which he edited and published with signal ability for twenty-nine years, it being the leading periodical for nurserymen and gardeners. After the multiplication of periodicals devoted to the florists' and nurserymen's trade, Mr. Meehan changed the character of his Monthly, making it eminent in illustrations of native plants, in botanical descriptions, and in notes in the varied departments of landscape and horticulture.

In the midst of the enormous demands of these business enterprises, Mr. Meehan found time to gratify his love and his genius for botanical research and he attained such proficiency that he became the valued correspondent of the late Professor Asa Gray and other experts in this country and in Europe. He was elected a Corresponding Member of this Society in 1869.

His mind was surprisingly alert to discover the secrets of nature, and to reveal the infinite wisdom of the Creator.

And to all this multiplicity of labor he yet added eminent service as a good citizen, jealously guarding the interests of the great city of Philadelphia for many years with signal skill and credit. The parks of that city bear witness to his wisdom. To few men have been given the privilege and the high honor of doing so much for the welfare of his fellowmen. We honor his memory; we mourn his loss.

To the family of the deceased we extend our sincere sympathy, while we congratulate them upon the rich inheritance they have received in his noble and honored life.

It was voted that this memorial be accepted and adopted.

On motion of William H. Spooner it was voted that the Society tender the use of its halls to the State Board of Agriculture on the occasion of its Semi-Centennial next July.

On motion of William C. Strong it was voted that the Committee of Arrangements be instructed that exhibitions which are open on Sunday shall be free on that day.

Charles Scully of Norwell,

having been recommended by the Executive Committee for membership in the Society, was on ballot duly elected.

Adjourned to Saturday, December 21.

BUSINESS MEETING.

Saturday, December 21, 1901.

An adjourned meeting of the Society was holden today at eleven o'clock, the President, O. B. Hadwen, in the chair.

E. W. Wood, Chairman of the Fruit Committee, read the Annual Report of that Committee, which was accepted and referred to the Committee on Publication.

Patrick Norton, Chairman of the Committee on Gardens, said that the report of that Committee was not ready but would certainly be at the January meeting and that the amount appropriated for that Committee was $500, of which $420 was awarded.

Further time was granted the Committee to prepare their report.

It was voted that reports of Committees not yet ready go over to the January meeting, and that the Secretary notify the Chairmen of such Committees to have them ready at that time.

J. Woodward Manning, Chairman of the Committee on Flowers, said that the Committee had under consideration the award of the Prospective Prize, which might increase the amount awarded by $30. He added that the amounts offered for Prizes for Flowers had not for two or three years exceeded the amount offered. This year the amount offered was $300 less than the amount appropriated.

It was voted that the offer in the Schedule of Prizes for Timber Trees be changed to correspond to the law of the Commonwealth requiring this prize to be offered.

Robert Manning read his Annual Report as Secretary and Librarian. The statement therein as to the insufficient width of the shelves provided by the Building Committee led to some remarks on that subject by Ex-Presidents William C. Strong and William H. Spooner, and William E. Endicott, Chairman of the Library Committee. It was finally left to the Library Committee to consider and report what changes are in their opinion necessary in the Library Room, with an estimate of their cost.

The subject of charging an admission fee on Sunday to such exhibitions as are kept open on that day was discussed, as also its legality, but no action was taken.

The meeting was then dissolved.

REPORT

OF THE

OPENING FLOWER SHOW.

HELD UNDER THE AUSPICES OF THE BUILDING COMMITTEE

JUNE 3-13, 1901.

By GEN'L FRANCIS H. APPLETON, Chairman.

Upon request, and in order to record in the Society's Transactions some account of the Flower Show of June, 1901, the undersigned has undertaken to do so by a few preliminary remarks followed by quotations from published articles which seem to him to be appropriate.

No attempt is made to catalogue the many plants there shown, as the press reports of that time furnished good records of the Show. It was originally intended that the Flower Show at Horticultural Hall should open on May 29, 1901, but the cold storm of the 19th having delayed the blossoming of many of the rarest flowers which were to be a part of the Show, it was found necessary to postpone that date to June 3 and close on the 13th, which was a continuance of a few days beyond the time originally selected. It was thought that so choice a display ought to be prolonged, and the owners of the many specimens kindly assented.

It is not possible to fully appreciate the amount of work accomplished by Professor Sargent, who planned the disposition of the exhibits and into whose care the owners so loyally placed such a vast number of valuable specimens, in their readiness to co-operate in promoting knowledge of a high standard of horticulture. From the time when Professor Sargent undertook to direct the future Show, until the hour when the last plant was safely in the

keeping of its owners, he was untiring in the efforts which resulted in so great a success.

The upper stories of the new Horticultural Hall had not been completed when the Flower Show of June 3–13, 1901, was opened, the Library being dedicated with due ceremony on November 9, following.

The Flower Show was not an exhibition where competition took place nor one at which money and medals were to be distributed, but was a great exhibit of what the wealth of capital in money and intelligence with loyal public spirit can do to promote interest in horticulture, and give a vast amount of pleasurable education to the people of Boston and those of other cities and towns in Massachusetts.

This Show was as choice in its line as has ever been within our reach or possibility. The lecture hall had then a floor of rough boards; the grand exhibition hall had an earth floor artistically divided by gravel walks into large beds in which exhibits were made with superb color effects. The small hall had its cement floor with facilities for quick drainage of the surplus water used for the orchids. The total effect in each hall and in the approaches thereto was superb.

The question of opening the Show on Sunday was before the management and was considered broadly and with great care. In order that all should have full opportunity to examine and study the plants and flowers it was decided to keep the show open at appropriate hours on Sunday at reduced rates.

The hours selected for opening and closing were 10 A.M. to 10 P.M. on week days and 1 P.M. to 10 P.M. on Sundays.

Favorable opportunities for visiting the exhibition, under suitable rules and at nominal rates, were extended to the school children of Boston and neighboring cities, as well as to the national conference of the Young Men's Christian Association then in session in Boston.

The electric light, telephone, and street railway officials gave us their aid in rearranging their street wires and in completing the out of door surroundings to our advantage as far as possible. To the Police Commissioners we are indebted for courteous co-operation and assistance.

While the Society gave the free use of the halls, the manage-

ment of the Show was held responsible for the financial results. Of the current expenditures on account of the Show, about one thousand dollars' worth of property was left in the possession of the Society as permanent additions to its plant.

A notable feature of the occasion was the day when that distinguished horticulturist, the constant friend and supporter of horticulture, Mr. H. Hollis Hunnewell, recovering from a severe illness, came from his estate in Wellesley to inspect and enjoy the Show.

The photograph then taken, which represents him in company with Mr. Sargent, sitting in the grand hall surrounded by the rare and beautiful specimens from his own and other estates, should be enlarged and preserved in our halls.

The Press of Boston and throughout Massachusetts came loyally to our aid in making known to the citizens of our Commonwealth, that choice types of horticulture were to be displayed in the new halls for their enjoyment, and much writing was done to promote the knowledge of what the Show would be, and to further its success.

The display made was evidently highly appreciated and most beneficial from an educational standpoint. The absence of competition for prizes was looked upon by many as a commendable feature, and the quality and quantity of the exhibition was certainly not lowered by its absence.

The awards that came from words of high praise in the Press were indeed Certificates of Merit that must have been highly prized by exhibitors. The modern method now being adopted by some associations and societies, of extending encouragement in the form of Certificates of Merit for marked excellence, should be carefully considered as to its promotive value.

For the real report of this June Flower Show I prefer to take the ex-parte statements of the Boston Press and select the following description of the exhibition from the Boston Transcript of June 4, 1901.

In the history of American horticulture the opening exhibition of the Massachusetts Horticultural Society in its new hall on the corner of Massachusetts and Huntington Avenues, now in progress, marks the highest point yet reached in floral displays in this country. The exhibition opened last evening at eight o'clock and all the evening the hall was thronged with flower lovers. There was no diminution in the attendance

this morning and half an hour after the exhibition was opened, at ten o'clock, there was a crowd that occupied all the aisles of the three flower-filled halls.

Entering the spacious vestibule, with its tiled ceilings, the visitor to the show turns to the right and enters the lecture hall. The eye is caught first by a splendid collection of wistarias of the purple variety, from the greenhouses of Professor Charles S. Sargent of Brookline, who has been the moving genius of the exhibition, and to whom is due the credit for the arrangement and plan of the exhibition. These are on the left artistically grouped, and on the right are long benches of gloxinias interspersed with adiantum farleyense to hide the pots, and forming a bewildering and kaleidoscopic group of colors.

Three white wistaria plants are ranged above this exhibit, and on the Huntington Avenue side of the hall is a bench of pelargoniums in rich bloom. The gloxinias are from the Sargent, Hunnewell, and Sprague estates and the pelargoniums are from the Hunnewell and Weld greenhouses. On the stage at the end of the hall is the finest specimen in America of the palm known as licuala granda from the estate of H. H. Hunnewell in Wellesley. On either side of this are graceful palms of the areca lutescens variety, and with a bank of amaryllis and lilium longiflorum, the effect is superb. In either corner of this hall are magnificent bay trees from the Italian gardens of Mrs. Charles F. Sprague of Brookline, the pots being masked by beautiful hydrangeas of immense size from the Sargent estate.

In the loggia between this hall and the main exhibition hall are arranged several plants of the rhyncospermum jasminoides, commonly miscalled jasmine, and bearing thousands of delicate white blossoms between their shiny green leaves. The effect of the view of the main hall from this point cannot be surpassed. It is one glorious blaze of color.

The plants which are used here are azaleas, rhododendrons and palms, and these have been arranged with the highest art by Professor Sargent assisted by Miss Beatrix Jones, the landscape gardener, so that they appear as if growing in a garden. At the right from this vantage point is seen a bank of Indian azaleas of the white and pink varieties, with here and there a sport showing in the snow-white bloom. On the left are the red and rose varieties of azaleas massed to show to the best advantage with borders of turf to complete the garden effect. Some of these plants are thirty years old and show the effect of the highest cultivation.

In the centre of the hall with pots sunken below the level of the turf are thirty-three splendid azaleas, one of the finest being a rose variety known as Marie Verschaffelt. The azaleas are from the private greenhouses of Professor Sargent. At the end of this hall is a splendid bank of rhododendrons from the Hunnewell estate, where rhododendron culture has been carried to the highest point reached in this country. All around the hall is a background of palms from the Ames, Sargent, and Hunnewell estates. The orchid collection which is in the small hall leading off from the main hall is the best ever gathered in America and conveys some

ideas of the richness of the private greenhouses in Boston and its vicinity. The largest exhibitor is Mrs. F. L. Ames of North Easton and others who have contributed are E. V. R. Thayer of South Lancaster, W. P. Winsor of Fairhaven, J. S. Bailey of West Roxbury, H. H. Hunnewell of Wellesley, Mrs. C. F. Sprague, J. E. Rothwell and Dr. C. G. Weld of Brookline. They were arranged with the highest of artistic skill by W. N. Craig the gardener of the Ames estate . . . There are in this hall about a thousand orchids including many rare and choice varieties. Of the cypripediums there are fifty varieties and there are about three hundred cattleyas. . . . In addition to the orchids more than a thousand adiantums and five hundred palms ranging from a few inches to fifteen feet in height have been used for decoration.

During the Show the Boston Cadet Band furnished excellent music afternoons and evenings which attracted people who might not otherwise have derived pleasure and profit from this wonderful combination of the horticulturists' skill.

DEDICATION OF THE NEW BUILDING

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.*

On the morning of the ninth of November, 1901, the new building of the Massachusetts Horticultural Society on Massachusetts Avenue was formally dedicated. The exercises were held in its spacious library. The annual Chrysanthemum Exhibition was in progress in the Exhibition halls and its brilliant display had attracted a large number of interested spectators.

Vice-President Benjamin P. Ware called the assembly to order and announced that, owing to the sudden death of the President's wife, Mr. Hadwen could not be present; his absence to be regretted in any case was far more so today.

He said that on this occasion when the Society is holding such an important show, marking a milestone in its annals, it should recognize the relation that the Society's work bears to the work of the divine Creator. The God-given talent of cultivation has resulted in a development of flowers infinitely superior to the products of unaided nature. The same has been true in all other lines of our work.

Mr. Ware then called upon Rev. Edward Everett Hale for prayer as especially appropriate to the dedication of such a temple.

Dr. Hale in an earnest prayer invoked the divine blessing upon the work of the Society and dedicated this temple of horticulture to the Creator of all life.

Mr. Ware said that this is the fourth home of the Society, marking a great transition from its first home, a room on North Market Street. The value of having a home where the books of the library, which could not be replaced, can be safely stored is

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* With the exception of the Addresses of President Hadwen and Ex-President Appleton this chapter has been compiled from the very full descriptions of the dedicatory exercises published in the Boston Transcript, the Boston Globe and the Boston Herald of November 9, 1901.—Ed.

inestimable. The progress of horticulture can best be demonstrated by looking at the splendid exhibit in the halls below, an exhibition which has never been surpassed in this State.

Hon. James L. Myers, Speaker of the Massachusetts House of Representatives was then called upon. He said that an exhibition such as this was one of the timekeepers of human progress, as President McKinley said of the Exposition at Buffalo, and then read from the Blue Book of 1829 showing the granting of a charter to the Society.

He spoke of the annual exhibitions as successive steps of progress and remarked upon the great benefits that all classes of people have derived from the work of this Society, and expressed a belief in the great measure of influence and usefulness that would go out from this hall and this library in the years before us. On behalf of the State he extended his earnest and warm congratulations.

A letter from Congressman Wm. H. Moody regretting that on account of a previous engagement, he could not be present to represent the nation was read, but Mr. Ware said that there was present a gentleman who represented the cause of humanity everywhere and called upon the Rev. Edward Everett Hale.

Dr. Hale made as usual a felicitous address. He said that if he should say all he felt like saying most of his hearers would wish they had brought a luncheon.

He then told of the work done by hundreds of children in Genesee Street at the South End, and how eager the people were to get the window-boxes that were provided, and how, when fall came and the gardens died, planting bulbs for spring was thought of.

He said that he wrote to the Department of Agriculture in Washington stating that he appreciated the work they were doing in North Dakota and Idaho and Nevada, but he wanted to know what they proposed to do for the benefit of agriculture in Genesee Street and then he told them what bulbs he wanted and he got them and the children up in that street are planting them today.

He wished to emphasize the necessity of being in the open air, a doctrine which he had preached at all times and which he should always go on talking about. It is one of the cardinal rules of good living.

Mr. Ware then introduced General Francis H. Appleton who made the principal address of the day, speaking as follows:

MASSACHUSETTS HORTICULTURAL SOCIETY: HISTORY OF THE SEED SOWN EARLY FROM WHICH THE MASSACHUSETTS HORTICULTURAL SOCIETY HAS DEVELOPED.

Mr. President, Members and Guests:

The date of origin of the Massachusetts Horticultural Society may be given as February 24, 1829, that being the day when the first formal action was had at a meeting of prominent horticulturists of Boston and vicinity. Measures were then taken looking to a permanent organization, and an adjournment was made to March 17, ensuing, when a constitution and by-laws were adopted and complete organization was affected by choice of a board of officers.

This was not a result suddenly arrived at; it might be said that many preliminary meetings extending through years had led up to it. Among the acts or events which may be described as preliminaries — though, indeed, not so intended — were the establishment and maintenance, during the preceding period of twenty-five years or more, as a matter of individual enterprise on the part of citizens in eastern Massachusetts, of numerous fine gardens of fruits and flowers. A like-mindedness in taste and enterprise would certainly be promotive among such of a degree of fraternization, active and cordial as proximity or opportunity might permit, and leading very easily though gradually to organization and coöperation.

Indeed, some note of preparation may be found in the records of horticultural endeavor in the earliest periods—those of the colony and the province and these manifestations became more frequent and more elaborated during the years of prosperity following upon the establishment on firm foundations of the government of the Union after the war of the Revolution had ceased.

The distinction *now* made and emphasized between the affairs or the products of agriculture and horticulture was not recognized by the former generations. All was considered under the

head of agriculture. Even at this day, in the administration of the government at Washington, all matters relating to the tilling of the surface of Mother Earth are classed as agriculture, and the department of bureaus and divisions which comprises those interests in which our society is concerned is officially called the Department of Agriculture.

Governor Winthrop, at Ten Hills farm in Charlestown and Governor Endicott at Salem, were extensive growers of young fruit trees and dealt in them as commodities, supplying their neighbors and fellow colonists; and Governor Prince of Plymouth Colony in an humbler way but in some fashion, seems to have been a promoter of horticulture there. It cannot be doubted that the doings of these Governors proved exemplary and called out not merely praise but imitation.

Of gardens which can be characterized as of fame but few are mentioned by the writers of these early times. It may be permissible, however, to refer to two, of which this may be said, that the respective situation of each was, probably, in sight from the point where we are now assembled.

One was the earliest of which Massachusetts has any record, the garden of William Blackstone on the westerly slope of Beacon Hill. On his departure for Rhode Island he was sufficiently paid for his garden by the local authorities, and, as money was a matter of high consideration in those times, we may well believe that his successors in the ownership and control of the garden, whom he called the "Lord Brethren," carefully fostered and preserved it.

In Governor Winthrop's day a garden was set apart for him and his successors by the General Court on one of the upper islands of the harbor, which then had the name bestowed upon it of "Governor's Garden." The name has come down to these times as "Governor's Island." It was proposed to have a vineyard and an orchard there, the product, in part, to go towards the Governor's salary.

At first a hogshead of wine was specified, but the grapes probably failed in that bleak situation, and, in the year 1640 the rent or what perhaps may be called the "royalty," was reduced to two bushels of apples, one for the Governor and one for the General Court.

Among the orders adopted in England by the Massachusetts Company, in anticipation of the migration hither, was one to provide English seeds, roots and plants for the proposed settlement. In the list of fruits appear the peach, plum, cherry, pear, apple, and quince; also currant plants.

The evidences are many that during the Provincial as distinct from the Colonial period Massachusetts communities made notable advances upon the achievements of their predecessors in the line of horticulture. Still it cannot be said that horticulture was a characteristic of the out-door industry of that day. Only the wealthy or more prosperous citizens had gardens of fruits and flowers. The general yield of the soil was specifically agricultural.

But we have mention of beautiful gardens in Boston and other populous centres. Would that there had been Kodaks in those early days to depict for us those early gardens. The eastern slope of Cotton or Pemberton Hill fronting on what we know as Tremont Row and Tremont Street north of Beacon Street, was to a very considerable extent terraced, and the successive levels of arable land were stocked with choice fruits and flowers.

Andrew Faneuil and his nephew and successor, the famous Peter Faneuil, owned and occupied one of the most celebrated of these estates. Its location was about opposite to the King's Chapel burial ground. The late Lucius M. Sargent, who had probably better information about the matter than any modern man, described the estate as "Faneuil's seven-acre Eden." The next estate was that of Governor Bellingham, and others of similar planning and adornment were farther to the northward along the slope.

Thomas Hancock, the uncle of the patriot and first Governor under the Constitution, appears to have had two slopes thus terraced and made luxuriant,—one on the south, near the Hancock mansion and overlooking the Common, and one on the north, covering, in part, territory known to us as upper Hancock Street and the State-House-extension lot.

Without doubt these numerous demonstrations of the horticultural art served both as instruction and incentive to others.

Horticulturists of the patriotic order who remained on their estates could have found but small opportunity under the conditions

prevailing in the ensuing ten or fifteen years, from the commencement of the Revolution, to gratify such tastes for horticulture.

But, as already intimated, the establishment of the new government on a solid basis brought about a revival. Cultivators of the soil throughout all the States took on new hope and enthusiasm, the chief men of the several communities leading the way. While the order of the Cincinnati established during this period encountered some opposition and criticism, the example of the old Roman, from whom the order derived its name, was very generally followed.

Washington, first in peace as in war, may be said to have been an early pioneer in this movement. The records of his diary and his correspondence show his personal activity in the way both of agriculture and horticulture. While the crops of tobacco, of maize, of cereals and roots of various sorts were diligently attended to, he found time to plant not only fruit trees but ornamental trees on his homestead premises. He surveyed, or caused to be surveyed, the grounds about the mansion, and designated on the plan thus produced the spot where certain trees or shrubs were to be set. He imported choice vines and trees from Europe.

He writes to a friend during these activities, expressing hope of a visit at a future day, and says that he will greet him under the shade of trees which his own hands have planted.

In these records we may read of exotic shrubs; of the planting of elm, maple, hemlock and ash trees along winding paths; of planting holly bushes and sowing holly berries in drills; of a green-briar hedge; of lilacs and honeysuckles; and also, in the same general scheme, we are informed of grapevines, crabapple trees and mulberry trees. What more beautiful spot than his ancient homestead's site at Mt. Vernon.

The second President of the United States, John Adams, during his term as Vice-President, became one of the founders of the system of agricultural societies in 1792, and throughout his long life never ceased from his enthusiasm for agriculture and horticulture.

And the third President, Thomas Jefferson, was an endless experimenter in these lines. Had he never gained international fame as a statesman and publicist, he would have gained it as

practitioner in farming and horticulture, and as inventor of appliances used in those arts.

The details need not be traced, for it will suffice to say that the impetus thus originating in the latter part of the 18th Century did not cease to be effective during the first quarter of the 19th, and that, in this condition of things, as the year 1829 was approaching, the formation of the Massachusetts Horticultural Society became an affair not so much, perhaps, of strenuous endeavor as of normal and timely evolution.

If what has thus been suggested may be regarded as remotely preliminary to the formation of the Society, certain circumstances, familiar enough to those who have scanned the official publications of the Society, may again be cited for the information of others, as being more directly and immediately preliminary.

In the year 1793 the first number of a magazine devoted to agriculture was issued in Massachusetts, which also had much bearing on horticulture. It was entitled the "Agricultural Repository." It continued periodically to appear until 1822, when a similar periodical was established by Thomas Green Fessenden, called "The New England Farmer." The field was cheerfully yielded to the new magazine by the publishers of the "Repository." The new periodical gave somewhat more space to matters horticultural, and, in the year 1828, the title was enlarged by adding the words "and Horticultural Journal."

In November, 1826, Joseph R. Newell, who had previously kept an agricultural warehouse elsewhere, removed to 52 North Market Street. In January, 1827, the office of the "Farmer" was established in the same building, on the second floor, where John B. Russell, then the publisher of the "Farmer," opened a seed-store.

The close combination of the "Farmer" office and the seed-store with the agricultural warehouse attracted agriculturists and horticulturists from all parts of the country; so that the office of the "Farmer" became an exchange for the discussion of all matters of interest to cultivators.

It was here that the subject of forming a horticultural society was discussed and when such a society was formed the "Farmer" naturally became its organ, when needed, and continued to be as long as the "Farmer" existed, that is, till the year 1846.

But the most immediate preliminary to the formation of the society was what may be styled a call and a response on the part of two citizens of reputation in a literary as well as horticultural way.

On January 9, 1829, a communication from Zebedee Cook, Jr. was printed in the "Farmer." It affirmed in quite eloquent terms the merit and utility of the horticultural art and called the attention of the practical horticulturists of the community "towards the founding of a Society for the promotion of that useful employment, of extending its blessings, and increasing the efforts of those who feel an interest in such pursuits."

The editor, Mr. Fessenden, cordially commended this appeal, and, in so doing, declared that "a Society for the promotion of skilful and scientific horticulture, established in Boston, would greatly subserve the interests of the community, as well as furnish avenues to laudable distinction and pure and praiseworthy enjoyment to the members of such an institution."

In the issue of the "Farmer" of the evening February 20th, an invitation, or "request," appeared addressed to such gentlemen as felt favorably disposed towards the institution of a Horticultural Society, to meet on February 24, at noon, at the insurance office of Zebedee Cook, Jr., for the purpose of taking preliminary measures thereto."

The record goes on to say that "although the day was bitterly cold, and a remarkable snow storm had just filled the streets to a depth of five or six feet, sixteen gentlemen appeared at the meeting."

The place of meeting was on Congress Street, No. 7½, or five doors southward from State Street. The insurance office bore that number, and the records of the board of assessors show that the location must have been what would now be described as the south-easterly corner of Worthington Building.

General H. A. S. Dearborn called the meeting to order and made fitting introductory remarks. The Hon. John Lowell presided and Zebedee Cook, Jr., was Secretary. Messrs. Dearborn and Cook, together with Samuel Downer, were made a committee to prepare a constitution and by-laws, and John B. Russell, Enoch Bartlett, Zebedee Cook, Jr., Samuel Downer and Cheever Newhall were associated as a committee to procure subscribers

to membership. The meeting was then adjourned to assemble at the same place on March 17, and then a constitution and by-laws were adopted and a permanent board of officers was chosen. General Dearborn was elected the first President of the Society.

The persons whose names are thus fortuitously brought together as being the first mentioned among those who are to be regarded as founders of the Society were representative men. The remainder of the one hundred and sixty subscribers, who were reported at the meeting of March 17, were men of like habits and sympathies.

Zebedee Cook, Jr., was a prosperous business man of the period and owned a fine estate of twenty-five acres, or more, in Dorchester. It was of irregular shape, fronting westerly upon what was then the turnpike road, now Dorchester Avenue, and southerly, with narrow dimensions, on Crescent Avenue. The southerly slope was made to be a triumph of horticulture, flowers and fruits sharing about equally in the honors. Near the front this garden was adorned by a lively brook, arched with grape vines, and in the rear the ground was thrown into terraces, which in the season were made brilliant with flowers. The ascent was crowned at the north with a rocky summit which gained the name of Cook's Hill. Thence a tract of arable land stretched, with ever widening margins and with gradual descent to the salt marshes.

This northerly tract was the farm. Agriculture had full sway here and in the centre was a huge barn for cattle and the storage of crops. Through this farm-tract the parkway called Columbia Road now extends towards South Boston.

The original estate had been split in two to make way for the Dorchester turnpike road, and the mansion house stood upon the westerly side of that road, on a triangular lot.

General Dearborn was the owner and occupant of an estate of eighty acres in Roxbury, near where Huntington Avenue now joins the old Brookline road. The mansion and grounds had been modelled by a preceding owner after some distinguished estate or the like in England.

That some share of this large estate was applied to horticulture is evident by the mention of General Dearborn as an exhibitor of rare fruits and flowers in the earliest exhibitions of the Society,

and by the fact that, on August 13, 1830, he had upon the table of that day's exhibition the first specimens ever shown of Dearborn's seedling pear.

John Lowell was the proprietor of what has been called a baronial estate at Roxbury. It was of extensive area and he had built upon it a stone residence copied from some European structure. The situation was on old Heath and Centre Streets. This estate, like that of Mr. Cook, though at a much later date, was cut in two to make a public way, in this instance not a turnpike road but the Boston and Providence railroad. Of its proper pretensions and just renown in the way of horticulture an opinion may be formed by the fact that the estate in Mr. Lowell's time had upon it five greenhouses.

Samuel Downer had at Dorchester one of the best stocked and best kept horticultural estates in the vicinity of Boston, at the date now referred to, and it held that rank for years afterwards. Its situation was the south-east declivity of "Jones' Hill." Its terraces were numerous and extensive. Fruits, rare in the extreme, were upon this hillside; flowering plants were scattered in settings here and there, and tribes of honey bees, whose hives occupied the level below the terraces, were busy and melodious at their work. On this estate originated the famous Downer cherry.

Enoch Bartlett's estate, in Roxbury, bordering southerly upon the present Dudley Street, northerly upon Magazine Lane and easterly upon Governor Eustis's estate, matched in some respects and surpassed in others that of Downer. The honors appear to have been about even between the two as to choice original fruitage; for on these Roxbury grounds was first produced the incomparable Bartlett pear.

Cheever Newhall owned and cultivated extensive farming tracts in Dorchester, towards one hundred acres in all. His homestead lot was perhaps of twenty-five acres, lying on the northerly side of the present Ashmont Street, and stretching towards Adams Street. Here he had flourishing orchards, principally of pear trees, of which there were several hundred. He was a man of enterprise and public spirit.

It does not appear that Messrs. Fessenden and Russell were men of landed property at the time now in view, but they were ardent champions of horticulture and efficient helpers in that cause.

The membership list of one hundred and sixty reported in March had, by September 10, 1829, increased to two hundred and forty-nine, comprising the names of many of the scientific and opulent citizens of Boston and suburbs, as well as considerable numbers of practical cultivators.

On April 28, 1829, the Society petitioned for an act of incorporation, which was promptly granted by the General Court, and was approved on June 12 by His Excellency Governor Lincoln, himself a practical horticulturist of your own energetic and busy city of Worcester, Mr. President, with its estates and Park land in whose Board I believe you are President.

The room where the meeting for organization of the Society was held, No. 7½ Congress Street, served in like manner for three subsequent meetings. It was convenient in some respects, situated at a central point, Mr. Cook's office being on the first floor. But with the increase of membership more space was needed, and, on June 9, arrangements previously made enabled the Society to hold a meeting in the building on North Market Street already spoken of. Here a place on the third floor had been fitted up, and in the first instance was called "the Society's room," which phrase the secretary improved upon in the next call — of date, June 12 — for a meeting, by giving the room a title as "Horticultural Hall."

The building has never quite lost the particular prestige thus obtained, and is still resorted to with horticultural intent and purpose, being now known as the Messrs. Breck's Agricultural Warerooms, from our distinguished Ex-President Joseph Breck, 1859–1862. Here the Society's earliest exhibitions of flowers were given, charming ones we may well believe, but small if measured by the present standards. The formation of a library, it appears, was also begun here. The situation and the outlook might be deemed, by Bostonians at least, as propitious for a beginning, giving a view of Faneuil Hall at the right hand, Quincy Market building and the market place on the left, and, through the vista of Merchants' Row, a glimpse of State Street.

The routine of things began at once by the display of choice samples weekly on Saturdays, though not during the winter season. The first weekly offering of products took place on June 20, 1829.

The first annual exhibition, on September 19, 1829, was made in the dining hall of the rebuilt famous hotel, known as the Exchange Coffee House. Visitors were admitted from 12 M. to 2 P. M., the members of the Society and guests being the exclusive occupants at 4 P. M., when a banquet was served,—a truly English idea to banquet, surrounded by the especial evidences of the objects for which the association existed. In the interval between the closing of the exhibition and the hour for dining, li erary or oratorical exercises took place in the hall of the Boston Athenæum.

Weekly displays continued to be made, as at first, at the North Market Street hall until May 14, 1831, when rooms were occupied in Joy's Building on Washington Street.

An enterprise, after considerable informal discussion, was entered upon on November 27, 1830, in the appointment of a committee "to inquire into the expediency of purchasing a piece of ground in the vicinity of Boston for a garden of experiment and a rural cemetery." This action culminated in the establishment of Mount Auburn Cemetery. The record of the Society in this matter is familiar and need not be traced in detail here.

The Society's responsible connection with the cemetery ceased on June 19, 1835, that being the date of the deed of conveyance of the premises to the Mount Auburn Corporation.

It appears to have been felt that the improvement of horticulture could be better promoted in other ways for the encouragement of individual efforts in the horticultural art, by the provision of suitable halls for the exhibition of improved products, and by the collection of a horticultural library than by the continuance of a garden.

To the policy of administration thus set forth, the Society has adhered. Liberal rewards have been offered and bestowed; a hall for exhibitions has been maintained; important and superb exhibitions have been made; the library has been steadily increased, both in respect to number of volumes and its intrinsic value and practical utility; quantities of seeds and rare plants have in the past been judiciously distributed; lectures, or public addresses, on horticultural themes have been provided, and much literature relating to the horticultural art and bearing the Society's approval has been issued.

Meetings, or banquets, of the Society have been graced by the presence of distinguished visitors from other states and lands and by men of special note among Massachusetts citizens.

Of the Society's brilliant festivals, the public assembly incident to the exhibition of 1845 could not have been surpassed, if ever equalled. The festival, as distinct from the exhibition, took place in the evening, in Faneuil Hall, which was made to be a scene of luxuriance by evergreen and floral adornment of the pillars and gallery fronts.

The President of the Society, Hon. M. P. Wilder, made the opening address, which was followed by speeches by Hon. Edward Everett, who had that morning arrived in Boston after a five years' residence abroad as minister to England; by Hon. Daniel Webster, who was introduced as "the Marshfield farmer"; by the Hon. J. G. Palfrey, Secretary of the Commonwealth; by Hon. Josiah Quincy, Ex-President of Harvard University; by Hon. R. C. Winthrop, and Hon. Caleb Cushing, who had just returned from his embassy to China. During the evening the venerable widow of Alexander Hamilton (daughter of Gen. Philip Schuyler), who sat on the right of the President, was introduced to the audience by Mr. Webster.

It may be remarked that on one or more occasions the annual exhibition was held in a huge tent on the Common. Besides its own halls in different locations (School Street and Tremont Street), the Society has, at different times, occupied for exhibitions Faneuil Hall, the Federal Street Theatre, Andrews Hall, and, four or five times, Music Hall.

That which I have endeavored to picture to you of the earlier days of this distinguished organization may be called the seed, the example, the incentive to the mighty changes and enormous advances that have followed.

Today, from the western line of Berkshire to the eastern shores of Massachusetts, the surface of our state bears evidence of horticultural activity and beauty in almost every degree of extent, and the advance is still making rapid strides.

In no small degree is our Society responsible for these results; she can well take much to her credit for the enhancing of the condition and beauty of the already fair face of this ancient Commonwealth.

As it is thought of, one is amazed at the improvements. Think only of the landscape beauty upon the many estates of all sizes in what is known as Metropolitan Boston, for example, with a most extensive system of Parks; the superb private estates with gardens; and the glass houses and fields of market produce in Arlington, Belmont, Revere and elsewhere, conducted upon business principles, guided by scientific knowledge, that can be surpassed nowhere else in the world; the markets for the sale of produce from these gardens, and the flower marts in many stores throughout our cities, contain products that vie with or surpass any that elsewhere exist; the knowledge of good road building is now with us, and is being put into practice in a way to be of great benefit; the encouragement of window gardening and school gardens is a most commendable feature of our work that deserves encouragement; and all direct and indirect influence for horticultural good that goes out from the fact of our existence as a Society.

In the long roll of members, past and present, who have been making this honorable record for the Massachusetts Horticultural Society, there are too many for me to recount, and to whom we all bow in respectful recognition. You know them well for their fondness for horticulture and their actual promoting of it. Those who have established the several prize funds, those who have given towards the support of our library, and especially that giver of largest amount in money, call for high recognition.

The many superb products of the soil that have first appeared on our tables and in our Halls to the benefit of the public are too numerous for me to try to recount.

I have, perhaps, taken up too much time and necessarily omitted much, but may your memories fill the gaps with reminiscent, helpful and pleasant thoughts of horticultural activity, progress and success from the time of our incorporation up to today.

We are now in this new Hall of great architectural beauty, designed after visits were made to structures used for like purposes abroad; prepared for horticultural uses in all its parts, and for such other uses as may be judged profitable, while being helpful and promotive to horticulture, without interfering with the duties of the Society. Its library and office floor is indeed

imposing, well lighted and quiet for its purposes; for the housing of its large and increasing, valuable library, which has reached more than ten thousand volumes bound and in pamphlet form. All is spacious. As the Society becomes more wonted to this new home, may its usefulness and honorable position that it has always held continue and advance, while it cares for the charge laid upon its shoulders by the State Government of 1829, at the instigation and by the wording of those earnest early horticulturists to whom I have referred "for the purpose of encouraging and improving the science and practice of Horticulture, and promoting the amelioration of the various species of trees, fruits, plants and vegetables, and the introduction of new species and varieties." Would that those words might be emblazoned on the walls of our Halls for all time, and may our Society always be most firmly united and organized upon the best business principles to uphold them.

I am sure that it has been the endeavor of all their successors in office and in the ranks, to strive to do their duty fully, and at all times, as they could best interpret it.

The great success of this Society has proved the wisdom of its management in the past; and with this building, and its large fund that will belong to it also ever devoted to promoting its aims and united effort for horticultural progress, success must ever be the goal that it will reach.

Let us ever seek to inspire a general and increasing interest in our work among the citizens of the Commonwealth so far as it is possible; may those who are able to make our large exhibitions for display a success by their exhibits, on the lines of instruction, pleasure, general helpfulness, and profit to the Society for other horticultural promotion, ever be ready to place their products within our Halls; and may those who seek recognition of merit and worth in new varieties ever find a continuance of the value to them of the award of merit from this Society, and seek it here.

May funds, from gift or bequest, continue to come to the Society from lovers of horticulture in every possible line for helpfulness, be they for effect either inside or outside of the Great Building.

We have now six hundred and eighty-two Life Members and one hundred and ninety-nine Annual Members — a total of eight

hundred and eighty-one. May people of every line of horticultural earnestness be encouraged to give their support to our good and patriotic cause.

Mr. President, I thank you and the Committee for your courteous invitation to speak upon the occasion, and heartily wish that all possible success from united effort in the Society's work now in progress here may result.

At the conclusion of General Appleton's address Mr. Ware, the presiding officer, declared the building dedicated to the advancement of flowers, fruits and vegetables.

Upon motion of General Appleton an expression of sympathy was sent by telegram to the President of the Society.

Mr. William C. Strong moved and it was voted that the address which President Hadwen had prepared for the occasion be requested and be published with the proceedings of the day.

Address of President Hadwen.

The Massachusetts Horticultural Society has reached a period of seventy-two years of incorporated life, and now approaches the third important epoch in its history, — the dedication of this Horticultural Building in which we are this day assembled, it being the third erected by the Society during its incorporation; and perhaps it may not be egotistical to state that it is without a peer in its arrangements for exhibitions, its magnificent architectural effect, and in its solidity and durability of construction. With its refined environment, having frontage on three streets, it is not only a conspicuous building in Boston, but equal, if not superior, to any Horticultural building in the world.

The Society during its seventy-two years of active existence, eminent in its calling, has achieved a marked success in the practical advancement of horticulture, and has rendered service to the whole country by advancing the art and science of horticultural pursuits. Its progress has been manifest in every known feature. The entire State, with its system of parks and rural embellishments, its highways, its adornment of homes, its increased revenue from horticultural pursuits is largely indebted to this Society, as well as are individuals who have been benefitted by the object lessons of its exhibitions, its library and its lectures during the winter seasons.

Let us hold in grateful remembrance the distinguished benefactors who, for this long period, have contributed their time and their means to insure the progress and prosperity of the Society, and let us encourage the active members now engaged in its wholesome work, both men and women who in the study of fruits, flowers and vegetables have natural and acquired fondness for pursuing the mysterious forces and hidden secrets which nature has always in store, and of which there is seemingly no end.

The silent, but magnificent exhibitions in the Halls denote the best practical demonstration of the progress of Horticulture, in which every season brings something new. Being now in gorgeous display, the flowers and the fruits of the autumn collected from all over the world are increasing the interest in the science of Horticulture in those who behold them; and the intelligence and skill manifested in their cultivation not only educate the faculties, but inspire a love for all that is beautiful and useful.

In the retrospect let us not be unmindful of the past, but ever cherish the work that has been accomplished by those who have preceded us in the great horticultural advancement that has made the Society eminent in encouraging the products of the fields, gardens and forests. These, being the special early objects of the Society, have now reached an importance unequalled by any period of time in the world's history.

DESCRIPTION OF THE NEW BUILDING

OF THE

MASSACHUSETTS HORTICULTURAL SOCIETY.

ERECTED A.D. 1900.

The completion and occupation of the new building of the Massachusetts Horticultural Society on Massachusetts Avenue, Boston, marks the beginning of another era in the history of the Society. For many years the need of enlarged accommodations has been strongly felt, and at various times propositions have been considered looking toward a change of location and providing increased facilities for carrying on the work of the institution.

The present building, it is believed, will furnish such accommodations for many years to come. The Building Committee, under whose supervision it has been erected, consisted of Francis H. Appleton, Charles S. Sargent, William J. Stewart, George A. Nickerson and Charles F. Curtis.

The accompanying plans from the architects' drawings present the general arrangement of the interior of the building while the frontispiece shows a view of the exterior, as seen from the corner of Massachusetts and Huntington Avenues.

The first floor of the building covers an area of 18,066 square feet, and contains the large exhibition hall, a smaller exhibition hall and a lecture hall.

The main hall is reached through a spacious vestibule, but a single step above the level of the sidewalk, and is 52½ feet in width by 123 feet in length, the height being 42 feet, not including the monitor roof.

At the easterly end of this hall is the loggia, a raised platform four and one-half feet above the main exhibition hall. It has an area of 28 by 52 feet, and broad stone steps connect it with the floor of the main hall. From the loggia a commanding view of the exhibitions can be had.

The small exhibition hall is 28 by 57 feet and 28 feet, 6 inches in height.

·BVILDING·FOR·
·MASS·HORTICVLTVRAL·SOCIETY
·MASS·AVENVE·
WEELWRIGHT + HAVEN ARCHITECTS.
1001 COLONIAL BVILDING BOSTON·

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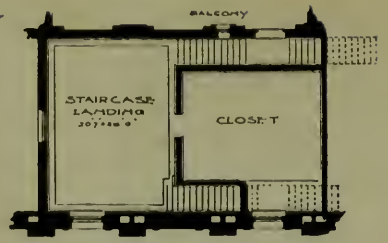
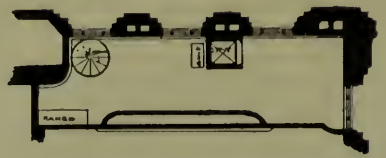
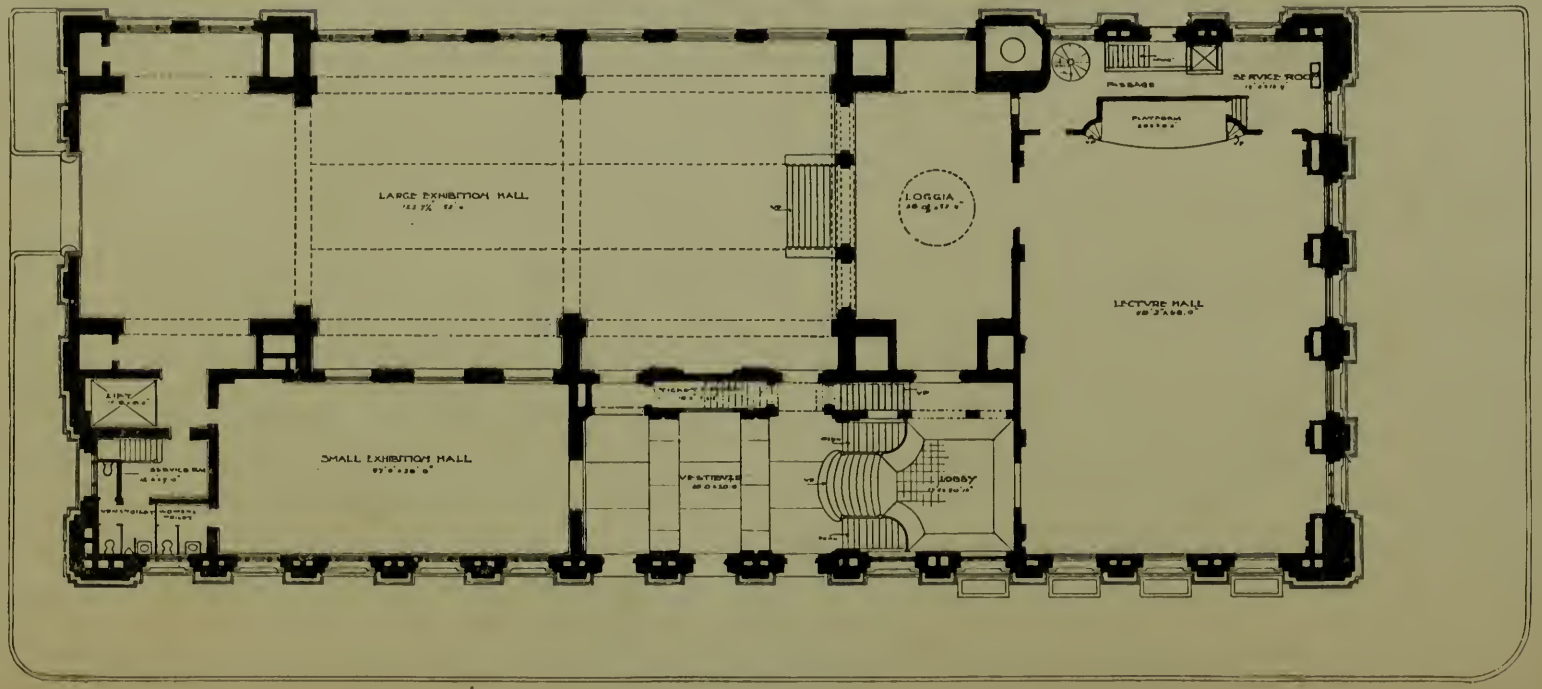


MEZZANINE FLOOR OVER VESTIBULE



MEZZANINE FLOOR OVER PLATFORM + SERVICE R'M.



Plan of the New Building. First Floor.

The lecture hall, which is on a level with the loggia, is at the Huntington Avenue end of the building and has a stud of 25 feet, and its dimensions are 48 by 68 feet.

The basement is devoted to the committee rooms, dressing and waiting rooms and a large banquet hall, the Falmouth Street end being occupied by the heating and electric apparatus with the necessary accessories.

The second floor, which is built around an interior court of 6,511 square feet, contains the spacious library and rooms for the use of the Secretary, Treasurer and committees. There is in addition large storage space for general uses.

The library is well lighted, arranged in alcoves and has a gallery around three sides. Every book is easily accessible without the aid of step-ladders. In design and finish the library is of great architectural beauty, and has ample capacity for at least fifteen years. The space for additional stacks, which the adjacent attics afford, gives room to meet all probable needs of book space that will ever be required.

The height of the building above the grade of the sidewalk to the top of the cornice is 57 feet, and to the top of the roof is 69 feet, 6 inches.

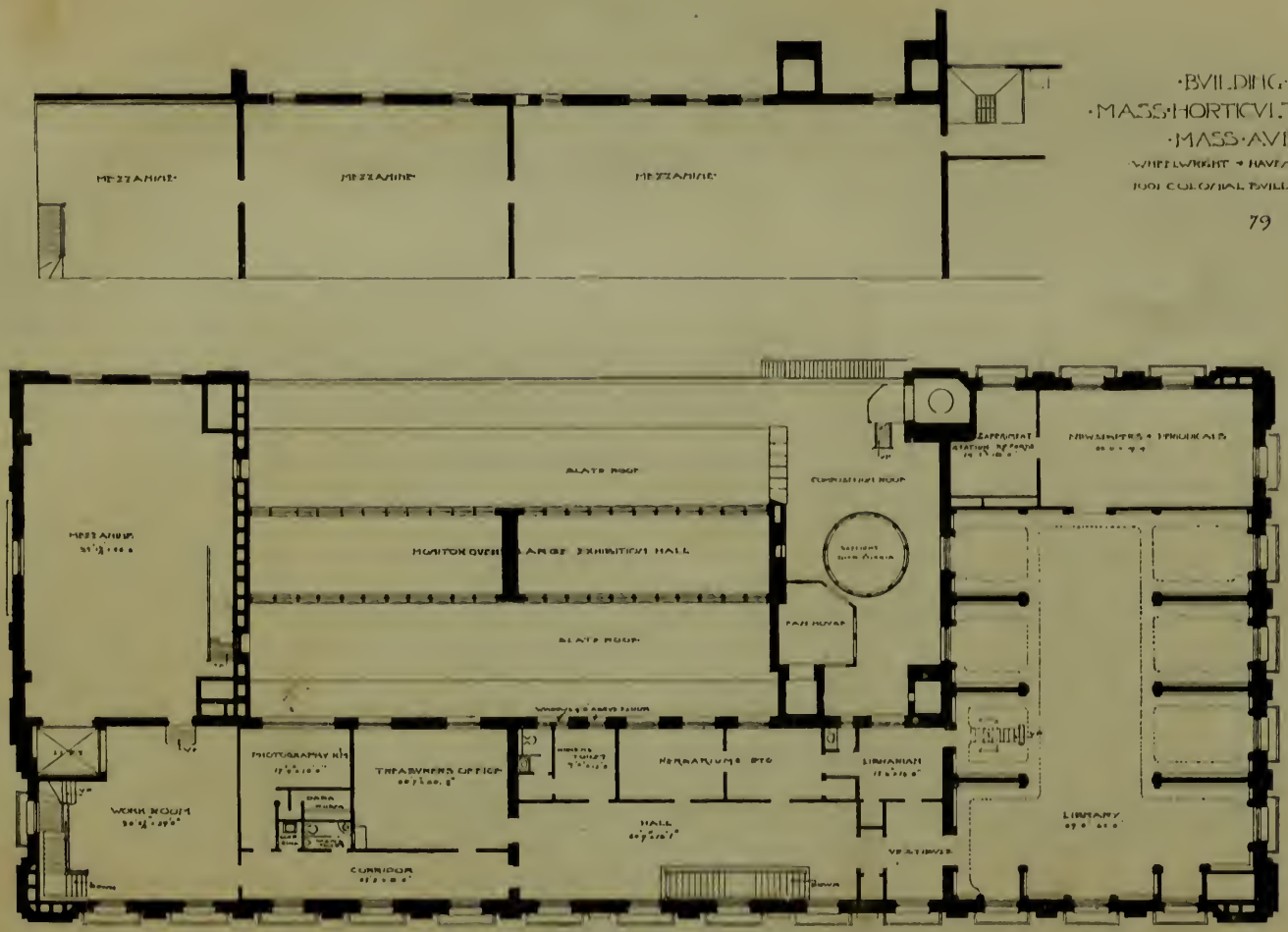
The construction is that of a building of the first class, as required by the building laws of this city, being in its main structure built of incombustible material.

The floors are of guastavino tile and concrete, or the concrete construction of the Eastern Expanded Metal Company.

In the roofs the same methods are employed, except that the roof over the large exhibition hall is composed in part of three-inch plank protected by metal lathing and plaster. The foundation's footings are concrete, widely spread upon the gravel and sand subsoil which was found to be too coarse to permit the economical use of piling.

The base course is of Deer Isle granite. The exterior brick is red, eastern water-struck, face brick, laid Flemish bond and the trimmings are of Bedford limestone.

The cheneau is of terra-cotta, matching the color of the limestone; the frieze panels being of Brescia, Bois d' Orient and Red of Levanto marble. The principal features of the facade are the



Plan of the New Building. Second Floor.

corner piers and the colonnade of brick pilasters supporting an ornamental entablature.

The floor of the entrance lobby is of North River bluestone, and that of the committee rooms in the basement and the small exhibition hall is granolithic.

The lecture hall, loggia and second story rooms have Georgia pine floors, while the large exhibition hall which has a temporary spruce floor, was originally designed to have a gravel floor so that pots of plants might be readily imbedded therein with a garden effect like that of some European horticultural buildings.

The walls of the lobby and small exhibition hall are laid with eastern pressed brick and those of the large exhibition hall and its loggia with eastern water-struck face brick.

The committee rooms in the basement, the lecture hall and the rooms on the second floor, other than the storage room, have plastered walls and ceilings.

The south wall of the storage room on the second floor at the Falmouth Street end, over the large exhibition hall, is supported by a brick arch to avoid the necessity of using steel girders which would have to be covered with metal laths and plaster to conform to the requirements of the building regulations.

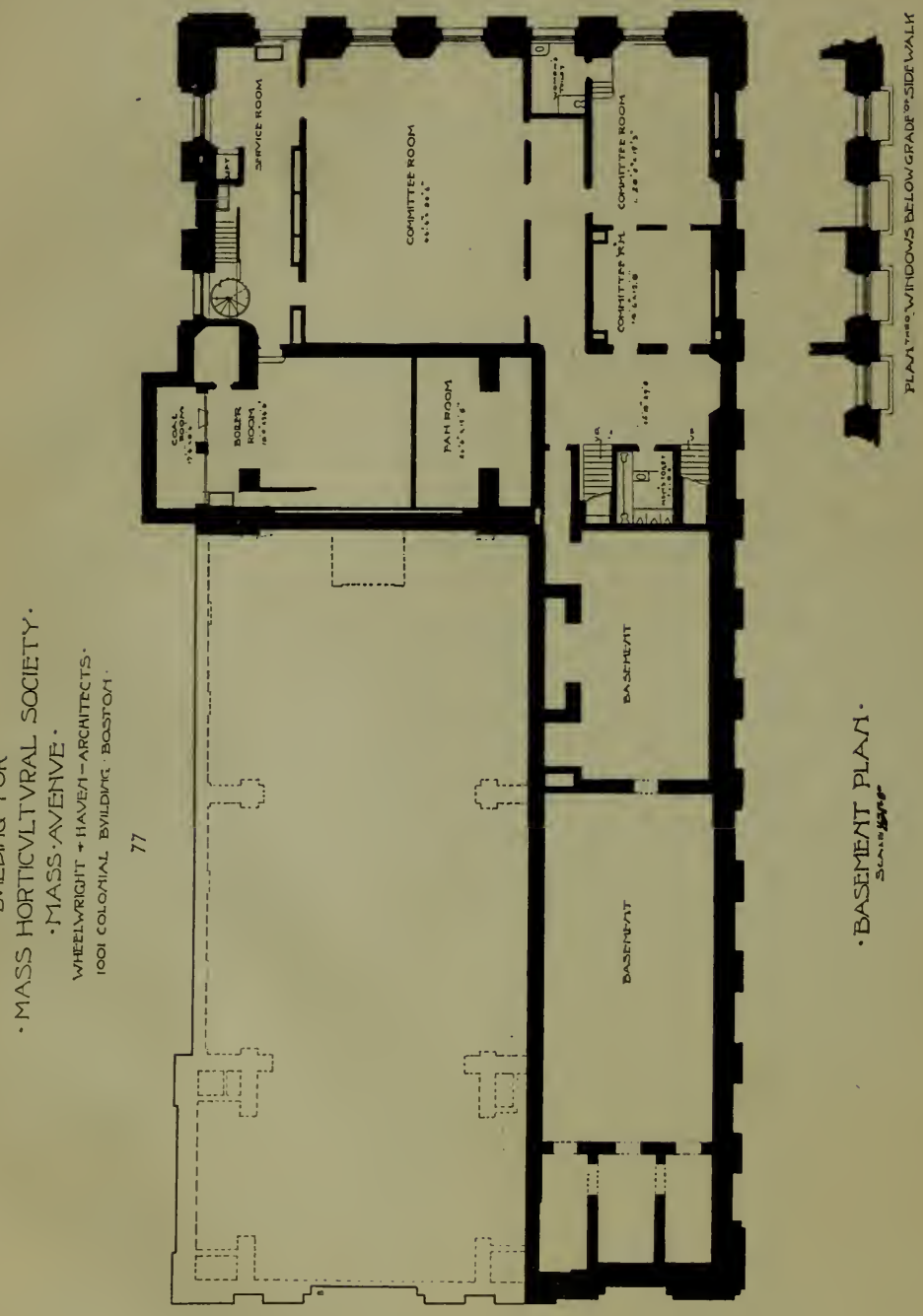
From Falmouth Street a wide and high doorway gives access on the street level to the floor of the large exhibition hall. This facilitates the easy and safe handling of large plants in the flower shows, thereby meeting the needs of the Society in this respect.

The interior finish throughout is selected Georgia pine. A large hand-lift serves the storage rooms on the Falmouth Street side of the building, and an electric lift, the well equipped kitchen over the service room which adjoins the lecture hall.

The heating, ventilation and electric work was carried out under the direction of Hollis French and Allen Hubbard, engineers, and the building was designed and constructed by Wheelwright & Haven, architects.

The cost of the building was $290,997 and that of the land $225,000, making a total of $515,997.

As an architectural work, the new Horticultural Hall is a noteworthy addition to the public buildings of the city, and its new location is destined to become the center of great business and social activities.



Plan of the New Building. Basement.

REPORT

OF THE

COMMITTEE ON PLANTS

FOR THE YEAR 1901.

By ARTHUR H. FEWKES, Chairman.*

Notwithstanding the unsettled conditions under which we have labored the past year, our exhibitions up to the time of leaving the old hall, and since the completion of the new, have been very satisfactory, particularly in the general good quality of the exhibits.

During the early part of the year we were favored, nearly every Saturday, with fine displays of Orchids which were most interesting and instructive. It is gratifying to note the unabated interest shown in exhibiting this class of plants and we look for its continuance.

In May our Committee unfortunately lost its chairman, Mr. Lunt, by resignation, and as an orchid expert his loss to us is keenly felt. In the following report, the part which covers the time up to his resignation, — from January 5th to April 6th — was written by him, the remainder by his successor.

The first exhibits of the year were made on January 5. The display of Primulas on this occasion, while showing improvement over former years, was not up to the standard in the *stellata* group. James E. Rothwell showed *Cypripedium* × *Longwoodense*, a pleasing hybrid between *C. Leeanum* var. *Masreelianum* and *C. Charlesworthii*, which received Honorable Mention. Oakes

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* Elected Chairman July 6th in place of William Wallace Lunt resigned.—Ed.

Ames exhibited three hybrid Cypripediums, viz: *Cypripedium* × *President McKinley* (*C. Harrisianum* × *C. insigne*), *C.* × *James A. Garfield* (*C. tonsum* var. *superbum* × *C. regale*) which received a First Class Certificate of Merit, and *C.* × *James K. Polk* (*C. Chamberlainianum* × *C. nitens*) which received Honorable Mention.

January 12. The exhibition on this day consisted of three very fine hybrid Cypripediums, as follows: — *Cypripedium* × *Chapmanii* (*C. Curtisii* × *C. bellatulum*) from Oakes Ames, *Cypripedium* × *Henry Graves, Jr.* (*C. Lawrenceanum* × *C. Marshallianum*) from J. E. Rothwell, and *Cypripedium* × *Hera*, var. *Trenton* (*C. Leeanum* var. *Masreelianum* × *C. Boxallii*) from C. G. Roebling of Trenton, N. J., the two former receiving Honorable Mention and the latter being awarded a First Class Certificate of Merit.

January 26. Henry T. Clinkaberry, of Trenton, N. J., exhibited a remarkably fine variety of *Cypripedium* × *Aylingii* var. *Washingtonianum* (*C. ciliolare*, giant variety, × *C. niveum* var. *grandiflorum*); this, without doubt, was *one* of the finest cypripediums exhibited for a number of years, combining as it did fine coloring and strength. It received the award of a Silver Gilt Medal.

February 2. The display of Freesias was disappointing, there having been a great falling off in late years of exhibits of this interesting class. R. & J. Farquhar & Co. exhibited a fine lot of Begonia Gloire de Lorraine var. *nana compacta*, for which they received a Silver Medal. Mrs. B. P. Cheney had twelve very fine plants of *Primula obconica*, and C. G. Roebling exhibited *Cypripedium* × *tessellatum* var. *Harrisianum*, for which he was awarded a First Class Certificate of Merit.

February 9. Walter P. Winsor exhibited *Dendrobium nobile* var. *Burfordiense*, for which he was awarded a Silver Medal. This is an unique form of *D. nobile* having the reverse marking of *D. Cooksoni*.

February 16. Mrs. F. L. Ames exhibited the most remarkable and interesting group of Dendrobiums ever shown within the remembrance of the Committee, receiving for the Collection a Silver Gilt Medal. They were as follows:

Dendrobium × *Ainsworthii* (type), and var. *roseum*,

" × *Amesianum*,

Dendrobium Amesianum var. × *grandiflorum*, which received a First Class Certificate of Merit,
" × *chrysodiscus*, which received a First Class Certificate of Merit,
" × *Cybele*, which received a Silver Medal,
" *Dulce*,
" × *euosmum*,
" *nobile* (type),
" " var. *Arnoldianum*,
" " " *Backhouseanum*, which received a Silver Medal,
" " " *Cooksoni*,
" " " *majus*,
" " " *nobilius*,
" " " *virginale*,
" *Robinsonianum*,
" × *Schneiderianum* var. *giganteum*, which received a First Class Certificate of Merit,
" × *splendidissimum* var. *grandiflorum*.

Walter Angus, gardener to Hon. Moses T. Stevens, North Andover, Mass., was awarded a First Class Certificate of Merit for Superior Cultivation of Begonia Gloire de Lorraine, and the Harvard Botanic Garden received awards as follows:

Primula stellata var. *alba*, First Class Certificate of Merit for Superior Cultivation,
Primula stellata var. *compacta*, Honorable Mention.

February 23. Mrs. John L. Gardner exhibited several plants of a seedling asparagus, which was claimed to be new, and which the Committee asked to have shown again after having been planted out. It received the award of Honorable Mention.

March 2. Oakes Ames exhibited *Coleus thyrsoideus*, a new flowering coleus of a pleasing color, receiving therefor a First Class Certificate of Merit.

March 9. James Comley exhibited a seedling Indian Azalea, var. New Century, for which he was awarded a gratuity.

SPRING EXHIBITION.

March 19, 20, 21 and 22.

This was a notable exhibition, and being the last large exhibition to be held in the old Hall each exhibitor apparently endeavored to do his utmost to make it a memorable one. It would not only be well nigh impossible but it would take too much space to give all the details of this exhibition, therefore mention will only be made of the more noticeable and important features. It is to be regretted that the class for Indian Azaleas is not competed for to a larger extent, the class (No. 29) for six named varieties not having an entry. Class No. 32, for Specimen Orchids brought out a grand display from Bayard Thayer (James Brydon, gardener). The display of Dutch Bulbs from the various exhibitors was all that could be desired, all being of exceptional merit. The exhibit of *Primula Sieboldi* by Frederic J. Rea showed great improvement, and was awarded a Bronze Medal, and the exhibits of Cyrus Lothrop of *Laelia flava*, Anson Phelps Stokes of *Asparagus Sprengeri* var. *compactus*, and M. H. Walsh of a Hardy Climbing Rose, were awarded First Class Certificates of Merit and were all remarkable for fine cultivation.

March 30. Col. Charles Pfaff exhibited *Dendrobium fimbriatum* var. *oculatum*, receiving a Bronze Medal for the same, and the Harvard Botanic Garden received Honorable Mention for *Asparagus schoberioides*.

April 6. E. S. Converse (D. Roy, gardener) displayed eighteen plants of dwarf Hydrangeas in pots for which he was awarded a gratuity.

After April 6th we had no exhibits until August 24th, when Oakes Ames (R. M. Grey, gardener) sent in a new hybrid orchid, *Cypripedium* × *Boxallo-Rothschildianum*, a plant of European origin, for which a Bronze Medal was awarded.

CHRYSANTHEMUM SHOW.

November 7, 8, 9 and 10.

After August 24 nothing was shown until the Chrysanthemum Show which opened on November 7th and included plants for which prizes were offered at the delayed September shows.

First Chrysanthemum Show in the New Building.

This exhibition marked the opening of the new Hall by the Society and was a most gratifying success although made under the discouraging conditions prevailing in the new exhibition room.

The quality of the plants shown, as a whole, was never excelled here, and seldom equaled, although the interest in the extra large specimens seems to be falling off somewhat. It is correspondingly on the increase in the class for nine-inch pots and some very beautiful plants of this size were shown.

Mrs. B. P. Cheney, E. S. Converse, Walter Hunnewell, J. S. Bailey, Dr. C. G. Weld, and James Nicol were the principal exhibitors of Chrysanthemum plants in the various classes. The interesting classes for plants grown to one flower and stem were well competed for and included many fine specimens.

The first prize for twelve named plants went to Mrs. B. P. Cheney and the second to E. S. Converse.

Mrs. Cheney's plants were:

Kate Broomhead,
Louis Boehmer,
Miss Georgiana Pitcher,
Mrs. C. B. Freeman,
Mrs. F. A. Constable,
Mrs. J. G. Breer,
Mrs. J. Trainker,
Mutual Friend,
Peter Kay,
Shilowa,
Silver Cloud,
The Bard.

Mr. Converse's plants were:

Arethusa,
Edith Smith,
Golden Gate,
Jeannie Falconer,
Louis Boehmer,
Marion Henderson,
Mrs. C. B. Freeman,
Mrs. J. G. Breer,
Mrs. J. Lewis,
Red Warrior,
The Bard,
Theo.

For ten named plants in nine-inch pots, J. S. Bailey was first, Walter Hunnewell second, and E. S. Converse third.

Mr. Bailey's plants were:

Arethusa,
Casco,
Col. D. Appleton,
Golden Trophy,
Ivory,
John Shimpton,
Louis Boehmer,
Mrs. H. Robinson,
Mrs. J. Lewis,
Theo.

Mr. Hunnewell's plants were:

Arethusa,
Black Hawk,
Defender,
Edna,
Kate Broomhead,
Mrs. H. Weeks,
Mrs. J. Lewis,
Mutual Friend,
Oriental Glory,
The Bard.

Mr. Converse's plants were:

Black Hawk,
Ivory,
Louis Boehmer,
Marion Henderson,
Mrs. C. B. Freeman,
Mrs. H. Weeks,
Mrs. J. G. Breer,
Mutual Friend,
Red Warrior,
The Bard.

Among the displays not in competition a very important addition to the exhibition was the one made by R. & J. Farquhar & Co. of Standard Bays, Palms, Araucarias and Begonia Gloire de Lorraine var. Caledonia. This display filled the entire rear end of the hall and made a welcome background for the other exhibits. R. & J. Farquhar & Co. also showed for the first time the variegated form of *Ficus repens* for which a First Class Certificate of Merit was awarded.

Lager & Hurrell of Summit, N. J., made an extensive display of orchids which were the centre of much interest throughout the exhibition.

Two other exhibits were worthy of more than passing notice, the magnificent collection of Gymnogrammas, silver and golden, from Charles Evans, and the pan of *Nerine flexuosa excellens* from Mrs. Cornelius Vanderbilt of Newport, R. I. (Robert Laurie, gardener). The former were very finely grown specimens in perfect condition, and the latter was a remarkably well-flowered specimen of this old but rare bulb, a representative of a very interesting but much neglected class of plants.

Mrs. John L. Gardner showed *Asparagus deflexus*, an interesting form in the way of *A. Sprengeri*, and received a First Class Certificate of Merit for it.

November 30. J. Tailby & Son of Wellesley, put on exhibition specimens of their Begonia Glory of Wellesley. This begonia is claimed to be a sport from the Gloire de Lorraine and was shown to us late last winter but not in condition to secure

recognition. It was again shown on the above date, at our request, in much better condition, proving the plant to be a much stronger growing form than the original and with larger flowers. It received the award of a Silver Medal.

Amount appropriated for prizes and gratuities for 1901		$2000 00
Amount awarded for prizes and gratuities	$1199 00	
Estimated cost of medals awarded	61 00	1260 00
Leaving an unexpended balance of		$740 00

PRIZES AND GRATUITIES AWARDED FOR PLANTS. 1901.

January 5.

Primula Sinensis.—Six plants in not less than six-inch pots:

First, Mrs. John L. Gardner	$4 00
Second, Mrs. John L. Gardner	3 00
Third, Mrs. B. P. Cheney	2 00

Primula stellata.—Six plants in not less than six-inch pots:

Second, Mrs. John L. Gardner	2 00

Primula obconica Hybrids.—Six plants in not less than six-inch pots:

First, Mrs. B. P. Cheney	4 00
Second, Mrs. B. P. Cheney	3 00
Third, Mrs. John L. Gardner	2 00

February 2.

Freesias. — Six pots or pans:

Second, H. Dumaresq	4 00

Gratuity:—

Mrs. B. P. Cheney, Twelve plants *Primula obconica*	5 00

February 16.

Gratuity:—

Harvard Botanic Garden, Display of Lachenalias and *Primula obconica*	8 00

February 23.

Gratuity:—

Harvard Botanic Garden, Thirty plants of seedling Cyclamen	8 00

MARCH 9.

Gratuities:—

James Comley, Seedling Indian Azalea New Century . . . 3 00
Bussey Institution, Display of Indian Azaleas, *Pyrus floribunda* var., and *Staphylea colchica* 4 00

SPRING EXHIBITION.

MARCH 19, 20, 21, AND 22.

Theodore Lyman Fund.

INDIAN AZALEAS.—Specimen plant, named:
First, Edward Butler $8 00
Second, Dr. C. G. Weld 6 00
Third, Dr. C. G. Weld 4 00

Society's Prizes.

ERICAS.—Six, not less than three species:
First, Dr. C. G. Weld 6 00
ORCHID.—Single plant:
First, Bayard Thayer 12 00
Second, Bayard Thayer 10 00
Third, Bayard Thayer 6 00
Fourth, Mrs. John L. Gardner 4 00
STOVE OR GREENHOUSE PLANT.—Specimen in bloom, other than Azalea or Orchid, named:
First, Dr. C. G. Weld 8 00
Second, James Comley 6 00
HARDWOODED GREENHOUSE PLANTS.—Four, in bloom:
First, Dr. C. G. Weld 10 00
Second, Dr. C. G. Weld 8 00
HARDY FLOWERING DECIDUOUS SHRUBS, FORCED.—Four, of four distinct species, named:
First, Mrs. John L. Gardner 8 00
Second, Bussey Institution 5 00
HARDY PRIMROSES.—Twelve plants of distinct varieties:
Third, Mrs. John L. Gardner 2 00
HARDY POLYANTHUSES.—Twelve plants of distinct varieties:
Second, Dr. C. G. Weld 4 00
CYCLAMENS.—Ten plants:
First, Mrs. B. P. Cheney 15 00
Second, J. S. Bailey 12 00
Ten plants, in not over seven-inch pots:
First, Mrs. B. P. Cheney. 8 00

Second, Mrs. B. P. Cheney	$6 00
Third, J. S. Bailey	4 00
Single plant:	
First, Mrs. B. P. Cheney	5 00
Second, H. H. Rogers	4 00
Third, H. H. Rogers	3 00
CINERARIAS.—Six varieties:	
First, Mrs. B. P. Cheney	10 00
Second, Mrs. John L. Gardner	8 00
Third, Dr. C. G. Weld	6 00
Three varieties:	
First, Mrs. John L. Gardner	6 00
Second, Mrs. B. P. Cheney	5 00
Third, Mrs. John L. Gardner	4 00
Single plant:	
First, Mrs. John L. Gardner	3 00
Second, H. H. Rogers	2 00
HYACINTHS.—Twelve named varieties in pots, one in each pot:	
First, Dr. C. G. Weld	8 00
Second, Mrs. John L. Gardner	5 00
Third, Bussey Institution	3 00
Six named varieties in pots, one in each pot:	
First, Dr. C. G. Weld	5 00
Second, Mrs. John L. Gardner	4 00
Third, Mrs. John L. Gardner	3 00
Single named bulb in pot:	
First, Bussey Institution	2 00
Second, Mrs. John L. Gardner	1 00
Three pans, not to exceed twelve inches, ten bulbs of one variety in each pan:	
First, Dr. C. G. Weld	6 00
Second, Dr. C. G. Weld	4 00
Third, Mrs. John L. Gardner	3 00
Two pans, not to exceed twelve inches, ten bulbs of one variety in each pan:	
First, Dr. C. G. Weld	4 00
Second, Mrs. John L. Gardner	3 00
Third, Bussey Institution	2 00
Single pan, not to exceed twelve inches, with ten bulbs of one variety:	
First, Mrs. John L. Gardner	3 00
Second, Bussey Institution	2 00
Third, Bussey Institution	1 00
TULIPS.—Six eight-inch pans, nine bulbs of one variety in each:	
First, Dr. C. G. Weld	6 00
Second, W. S. Ewell & Son	4 00
Third, W. S. Ewell & Son	2 00

Three eight-inch pans, nine bulbs of one variety in each:

First, Dr. C. G. Weld	3 00
Second, W. S. Ewell & Son	2 00
Third, W. S. Ewell & Son	1 00

Three ten-inch pans, twelve bulbs of one variety in each:

First, Dr. C. G. Weld	5 00
Second, Dr. C. G. Weld	4 00
Third, W. S. Ewell & Son	3 00
Fourth, W. S. Ewell & Son	2 00

Polyanthus Narcissus.—Four seven-inch pots, four bulbs in each, distinct varieties:

First, Dr. C. G. Weld	4 00
Second, Dr. C. G. Weld	3 00
Third, Bussey Institution	2 00

Jonquils.—Six pots or pans, not exceeding eight inches, the number of bulbs in each to be at the discretion of the grower:

First, W. S. Ewell & Son	4 00
Second, Dr. C. G. Weld	3 00
Third, W. S. Ewell & Son	2 00

Narcissuses.—Six eight-inch pans, distinct varieties, single or double:

First, Dr. C. G. Weld	6 00
Second, W. S. Ewell & Son	4 00
Third, Harry S. Rand	3 00

Three eight-inch pans:

First, W. S. Ewell & Son	3 00
Second, Dr. C. G. Weld	2 00

Lilium longiflorum.—Four pots, not exceeding ten inches:

First, E. N. Peirce & Son	10 00
Second, E. N. Peirce & Son	8 00

Lily of the Valley.—Six pots or pans, not exceeding eight inches:

First, W. S. Ewell & Son	4 00
Second, Bussey Institution	3 00
Third, Bussey Institution	2 00

Crocuses.— Three boxes, each eight by twenty inches, three distinct varieties:

First, W. S. Ewell & Son	3 00
Second, W. S. Ewell & Son	2 00
Third, Bussey Institution	1 00

Ixias.—Six pots or pans, in varieties:

First, Dr. C. G. Weld	5 00

Tritonias.—Six pots or pans, in varieties:

First, Dr. C. G. Weld	5 00

Roman Hyacinths.—Six eight-inch pans, ten bulbs in a pan:

First, W. S. Ewell & Son	4 00

Second, W. S. Ewell & Son 2 00
Third, Bussey Institution 1 00

General Display of Spring Bulbs.—All classes:
First, Dr. C. G. Weld 25 00
Second, W. S. Ewell & Son 20 00
Third, Bussey Institution 15 00

Gratuities:—

H. H. Rogers, Collection of Azaleas and Cyclamen . . . 5 00
Mrs. B. P. Cheney, Collection of Cyclamen 6 00
Mrs. John L. Gardner, Collection of Hyacinths 3 00
Hon. M. T. Stevens, Collection of Begonia Gloire de Lorraine . 5 00
James Comley, Display of Tricolor Geraniums 2 00
I. G. Noyes, Collection of Cacti 2 00
Bussey Institution, Collection of Native Plants 5 00
Harvard Botanic Garden, Display 20 00

April 6.

Gratuity:—

E. S. Converse, Display of eighteen plants of Dwarf Hydrangeas 8 00

CHRYSANTHEMUM SHOW.

November 7, 8, 9, and 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

Palms.—Pair, in pots or tubs, not more than twenty-four inches in diameter:
First, Mrs. John L. Gardner 12 00
Pair, in pots not more than fourteen inches in diameter:
First, Dr. C. G. Weld 8 00
Second, Mrs. John L. Gardner 6 00

Greenhouse Plants.—Collection containing foliage plants of all descriptions, not to exceed forty plants, in pots or tubs:
First, Mrs. John L. Gardner 45 00
Six Greenhouse and Stove Plants, of different named varieties, two Crotons admissible:
First, Mrs. John L. Gardner 25 00
Second, J. S. Bailey 20 00

Table Decoration.—For fifteen covers, in one receptacle, only one entry admissible:
First, Edward J. Mitton 10 00

FLOWERING GREENHOUSE PLANT.—Single specimen, named:
First, Dr. C. G. Weld 8 00
FERNS.—Specimen, other than Tree Fern:
First, James L. Little 4 00
Second, Charles Evans 3 00
DRACÆNAS.—Six named varieties:
First, J. S. Bailey 8 00
Second, Mrs. John L. Gardner 5 00
CROTONS.—Six named varieties, in not less than eight-inch pots:
First, J. S. Bailey 10 00
CYCAD.—Single plant, named:
First, Dr. C. G. Weld 10 00
CHRYSANTHEMUMS.—Display of twelve named plants, any or all classes, distinct varieties:
First, Mrs. B. P. Cheney 60 00
Second, E. S. Converse 50 00
Display of ten named plants, any or all classes, distinct varieties, in not exceeding nine-inch pots:
First, J. S. Bailey 30 00
Second, Walter Hunnewell 25 00
Third, E. S. Converse 20 00
Three Japanese Incurved:
First, Mrs. B. P. Cheney 12 00
Specimen Japanese Incurved, named variety:
First, Mrs. B. P. Cheney 6 00
Second, E. S. Converse 5 00
Specimen Reflexed, named variety.
First, E. S. Converse 6 00
Second, Mrs. B. P. Cheney 5 00
Third, E. S. Converse 4 00
Specimen Anemone Flowered, named variety:
First, Walter Hunnewell 6 00
Second, J. S. Bailey 5 00
Specimen Pompon, named variety:
First, E. S. Converse 4 00
Second, Mrs. B. P. Cheney 3 00
Twelve plants, of twelve different varieties, grown to one stem and bloom, in not over six-inch pots, preference being given to plants not more than three feet in height:
First, James Nicol 8 00
Second, Dr. C. G. Weld 6 00
Third, E. S. Converse 4 00
Fourth, R. C. Winthrop 2 00
Six plants grown as above but all of one color, Red:
First, James Nicol 4 00
Second, Dr. C. G. Weld 3 00
Third, E. S. Converse 2 00

White:
- First, James Nicol 4 00
- Second, James Nicol 3 00
- Third, Dr. C. G. Weld 2 00

Pink:
- First, Dr. C. G. Weld 4 00
- Second, Dr. C. G. Weld 3 00

Yellow:
- First, James Nicol 4 00
- Second, Dr. C. G. Weld 3 00
- Third, Dr. C. G. Weld 2 00

Any other color:
- First, Dr. C. G. Weld 4 00
- Second, Dr. C. G. Weld 3 00
- Third, R. C. Winthrop 2 00

Six plants grown to bush form, in not over eight-inch pots, without stakes:
- Second, J. S. Bailey 6 00

Group of Chrysanthemums, arranged for effect, with palms and decorative foliage plants, limited to one hundred square feet:
- First, Mrs. John L. Gardner 25 00

Gratuities:—

E. S. Converse, Eight plants Standard Chrysanthemums . . 16 00
Dr. C. G. Weld, Display of single stem Chrysanthemums . . 10 00
James Nicol, Single stem Chrysanthemums 3 00
Walter Hunnewell, three Chrysanthemum plants 5 00
Lager & Hurrell, Summit, N. J., Display of Orchids . . . 25 00
H. N. Eaton, Display of *Lilium Harrisii* 6 00
E. S. Converse, *Peristeria elata* 2 00
Dr. C. G. Weld, Display of Heaths 2 00
R. & J. Farquhar & Co., Display of Bay-trees, Palms, Araucarias and Begonia Caledonia 50 00
Charles Evans, Display of Gymnogrammas, silver and golden . 15 00
F. Skinner, Stag-horn Ferns 2 00
James Anderson, Crested Nephrolepis 1 00

SOCIETY'S SILVER GILT MEDALS.

January 26. Henry T. Clinkaberry, Trenton, N. J., for *Cypripedium* × *Aylingii* var. *Washingtonianum* (*C. ciliolare*, giant var. × *C. niveum grandiflorum*).

February 16. Mrs. F. L. Ames, for collection of Dendrobiums:
D. Ainsworthii (type), *D. nobile* var. *Arnoldianum*,
" " var. *roseum*, " " " *Backhouseanum*,
" *Amesianum*, " " " *Cooksoni*.

D. Amesianum, var. *grandiflorum*,
" *chrysodiscus*,
" *Cybele*,
" *Dulce*,
" *euosmum*,
" *nobile*,
D. nobile var. *majus*,
" " " *nobilius*,
" " " *virginale*,
" *Robinsonianum*,
" *Schneiderianum giganteum*,
" *splendidissimum grandiflorum*.

SOCIETY'S SILVER MEDALS.

February 2. R. & J. Farquhar & Co., for Begonia Gloire de Lorraine var. *nana compacta*.

February 9. Walter P. Winsor, for *Dendrobium nobile* var. *Burfordiense*.

" 16. Mrs. F. L. Ames, for *Dendrobium nobile Backhouseanum*.

" " Mrs. F. L. Ames, for *Dendrobium Cybele*.

November 30. J. Tailby & Son, for Begonia Glory of Wellesley.

December 21. Henry T. Clinkaberry, for *Laelio-Cattleya Cappei* var. *Intensity* (*C. Warscewiczii* var. *Lagerii* × *L. cinnabarina*), the second prize for American Seedling Orchid, other than Cypripedium, exhibited by the originator.

SOCIETY'S BRONZE MEDALS.

Spring Exhibition, March 19–22. Frederic J. Rea, for collection of *Primula Sieboldi*, sixteen varieties.

March 30. Col. Charles Pfaff, for *Dendrobium fimbriatum* var. *oculatum*.

August 24. Oakes Ames, for new Hybrid Orchid, *Cypripedium* × *Boxallo-Rothschildianum*.

FIRST CLASS CERTIFICATES OF MERIT.

January 5. Oakes Ames, for *Cypripedium* × *James A. Garfield* (*C. tonsum* var. *superbum* × *C. regale*).

January 12. C. G. Roebling, Trenton, N. J., for new seedling *Cypripedium* × *Hera* var. *Trenton* (*C. Leeanum* var. *Masreelianum* × *C. Boxalli*).

February 2. C. G. Roebling, for *Cypripedium* × *tessellatum* var. *Harrisianum*.

February 16. Mrs. F. L. Ames, for *Dendrobium chrysodiscus*.

" " Mrs. F. L. Ames, for *Dendrobium Schneiderianum giganteum*.

" " Mrs. F. L. Ames, for *Dendrobium Amesianum* var. *grandiflorum*.

" " Walter Angus, for Superior Cultivation of Begonia Gloire de Lorraine.

" " Harvard Botanic Garden (Robert Cameron, gardener), for Superior Cultivation of *Primula stellata* var. *alba*.

March 2. Oakes Ames, for *Coleus thyrsoideus*.

Spring Exhibition, March 19–22. Cyrus Lothrop (H. Cole, gardener), for Superior Cultivation of *Lælia flava*.

" " " " Anson Phelps Stokes, for *Asparagus Sprengeri* var. *compactus*.

" " " " M. H. Walsh, for Hardy Hybrid Climbing Rose Sweetheart.

Chrysanthemum Show, November 7–10. Mrs. John L. Gardner, for *Asparagus deflexus*.

" " " " Mrs. Cornelius Vanderbilt, for *Nerine flexuosa excellens*.

" " " " R. & J. Farquhar & Co., for *Ficus repens variegata*.

HONORABLE MENTION.

January 5. J. E. Rothwell, for *Cypripedium Longwoodense* (*C. Leeanum* var. *Masreelianum* × *C. Charlesworthii*).

" " Oakes Ames, for *Cypripedium James K. Polk* (*C. Chamberlainianum* × *C. niveum*).

" 12. Oakes Ames, for *Cypripedium* × *Chapmanii* (*C. Curtisii* × *C. bellatulum*).

" " J. E. Rothwell, for *Cypripedium* × *H. Graves, Jr.* (*C. Lawrenceanum* × *C. Marshallianum*).

February 16. Harvard Botanic Garden, for *Primula stellata* var. *compacta*.

" 23. Mrs. John L. Gardner, for Seedling Asparagus.

Spring Exhibition, March 19–22. Mrs. Warren H. Heustis, for Superior Cultivation of *Oxalis rosea*.

March 30. Harvard Botanic Garden, for *Asparagus schoberioides*.

Chrysanthemum Show, November 7–10. George McWilliam, for Heliconia Sport.

December 21. J. E. Rothwell, for Seedling Orchid, *Cattleya intermedia* × *Lælia cinnabarina*.

ARTHUR H. FEWKES,
JAMES WHEELER,
WM. J. MARTIN,
ROBERT CAMERON,
ROBERT MELROSE GREY,
} *Committee on Plants.*

REPORT

OF THE

COMMITTEE ON FLOWERS

FOR THE YEAR 1901.

By J. WOODWARD MANNING, Chairman.

The Report of the Flower Committee for the year 1901 must of necessity be short, owing to the lack of exhibits throughout the year.

Such exhibits as could be held were very creditable and attracted the usual amount of attention. Unfortunately, the Rose, Pæony and Dahlia Shows, which have interested the public so largely in the last few years, could not be held, but we have every reason to believe that there would have been very creditable exhibits in this line had there been opportunity to enter such.

The Spring Exhibition was rich in its display of forced Roses and Carnations.

The Chrysanthemum Show showed an advance in the careful culture of these beautiful flowers and proved that the limit of perfection was elastic and that what seemed impossible of improvement yet continued to show further excellence. A large number of new exhibitors made displays at this exhibition and the competition was even closer than it has been in past years. There seems to be no indication of lack of popularity in this flower this year.

With the added facilities that our new hall affords it would seem that we should be able to give the exhibitors the full allowance of room that is necessary that they may be able to display their exhibits to the best advantage, and also to enable the public to gain free access for the enjoyment of such exhibits.

We are hoping that the following year we shall be able to report the great improvement in display, as well as added interest on the part of the public, that would seem called for in view of the greatly increased facilities we now have for future exhibits.

Your Committee has awarded prizes to the money value of $979.00 during the year, leaving a balance of $1521.00 from which should be deducted the necessary amount to pay for the four Silver Medals, the three Silver Gilt Medals, two Bronze Medals and seven First Class Certificates of Merit.

PRIZES AND GRATUITIES AWARDED FOR FLOWERS.

1901.

January 5.

Primula Sinensis.— Display of fifty or more individual blooms:

First, Mrs. John L. Gardner	$2 00
Second, Mrs. John L. Gardner	1 00

Freesias.— Vase of fifty spikes:

First, Mrs. E. M. Gill	2 00

Gratuities:—

J. E. Rothwell, Display of Cypripediums	2 00
Mrs. E. M. Gill, Display	1 00

February 2.

Violets.— Best collection of varieties, in bunches of fifty blooms each:

First, Norris F. Comley	4 00
Second, Norris F. Comley	3 00

Carnations.— Display of cut blooms, with foliage, not less than six varieties:

First, M. A. Patten	8 00
Third, Miss Hattie B. Winter	4 00

Camellias.— Display of named varieties, cut flowers with foliage, not less than twelve blooms, in not less than six varieties:

First, James Comley	4 00
Second, James Comley	3 00

Gratuities:—

James Comley, Camellias	4 00
J. W. Howard, Camellias	3 00
W. J. Clemson, Two vases Freesias	2 00
Mrs. E. M. Gill, Display	2 00

FEBRUARY 9.

Gratuities:—

James Comley, Camellias 5 00
Mrs. E. M. Gill, Display 1 00

FEBRUARY 16.

Gratuity:—

James Comley, Display 6 00

FEBRUARY 23.

Gratuities:—

James E. Rothwell, Display of Orchids 1 00
Norris F. Comley, Violets 1 00
James Comley, Camellias 5 00
Mrs. E. M. Gill, Display 1 00

MARCH 2.

Gratuities:—

John L. Bird, *Acacia pubescens* 1 00
Mrs. E. M. Gill, Display 1 00

MARCH 9.

Gratuities:—

James Comley, Basket of Camellias 3 00
Mrs. E. M. Gill, Display 1 00

SPRING EXHIBITION.

MARCH 19, 20, 21 AND 22.

HYBRID PERPETUAL ROSES.— Twelve blooms, in not less than four named varieties:
First, Mrs. A. W. Spencer 12 00
Six blooms, not less than three named varieties:
First, Col. Charles Pfaff 6 00
Second, Mrs. A. W. Spencer 5 00
Twelve blooms of Ulrich Brunner:
First, E. M. Wood & Co. 10 00
Second, John McFarland 8 00
TENDER ROSES, IN VASES.— Twelve blooms of American Beauty:
First, E. M. Wood & Co. 15 00
Second, Exeter Rose Conservatories, Exeter, N. H. . . 12 00
Third, Briar Cliff Greenhouses, Scarboro, N. Y. . . . 10 00

Twenty-five blooms of The Bride:
First, E. M. Wood & Co. 10 00
Second, John Pritchard 8 00
Third, W. H. Elliott 6 00
Twenty-five blooms of Bridesmaid:
First, E. M. Wood & Co. 10 00
Second, John Pritchard 8 00
Third, W. H. Elliott 6 00
Twenty-five blooms of Meteor:
First, W. H. Elliott 10 00
Twenty-five blooms of Souvenir de Président Carnot:
First, W. H. Elliott 10 00
Twenty-five blooms of Liberty:
First, E. M. Wood & Co. 12 00
Second, W. H. Elliott 8 00
Carnations.— Vase of one hundred cut blooms, with foliage, not less than six varieties:
First, M. A. Patten 8 00
Second, Peter Fisher 6 00
Third, Col. Charles Pfaff 4 00
Twenty-five blooms of any named Crimson variety:
Second, Briar Cliff Greenhouses, for Gen. Maceo . . . 2 00
Twenty-five blooms of any named Dark Pink variety, (William Scott or darker):
First, Peter Fisher, for Mrs. Thomas W. Lawson . . 3 00
Second, Briar Cliff Greenhouses, for Mrs. Thomas W. Lawson 2 00
Twenty-five blooms of any named Light Pink variety, (Lighter than William Scott):
Second, Briar Cliff Greenhouses, for Maud Dean . . . 2 00
Twenty-five blooms of any named Scarlet variety:
First, Briar Cliff Greenhouses, for G. H. Crane . . 3 00
Twenty-five blooms of any named White variety:
First, Briar Cliff Greenhouses, for White Cloud . . . 3 00
Twenty-five blooms of any named Yellow Variegated variety:
First, Briar Cliff Greenhouses, for Gold Nugget . . . 3 00
Second, S. J. Goddard, for Eldorado 2 00
Twenty-five blooms of any named White Variegated variety:
First, Briar Cliff Greenhouses, for G. M. Bradt . . . 3 00
Violets.—Bunch of one hundred blooms of Lady Hume Campbell:
First, D. T. Harrigan 3 00
Second, Norris F. Comley 2 00
Bunch of one hundred blooms of Marie Louise:
First, Harry S. Rand 3 00
Second, Norris F. Comley 2 00
Bunch of one hundred blooms of any other double variety:
First, Norris F. Comley 3 00

Bunch of one hundred blooms of any single variety:

First, William Sim	3 00
Second, William Sim	2 00

Gratuities:—

Col. Charles Pfaff, Magna Charta Roses	8 00
The Floral Exchange, Inc., Philadelphia, Pa., Vase of Rose Queen of Edgely	5 00
Miss M. S. Walker, Vase of Roses	8 00
Col. Charles Pfaff, Display of Roses	3 00
Charles Evans, Mignonette	2 00
C. H. Souther, Vase of Antirrhinums	1 00
Norris F. Comley, Lilacs	2 00
Mrs. E. M. Gill, Basket of Flowers	3 00
James Comley, Display	6 00
Mrs. A. W. Spencer, Display	6 00
Mrs. E. M. Gill, "	2 00

MARCH 30.

Gratuity:—

O. B. Hall, Seedling Petunias	1 00

CHRYSANTHEMUM SHOW.

NOVEMBER 5, 6, 7 AND 8.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

Special Prizes.

Josiah Bradlee Fund.

CHRYSANTHEMUMS.— Twenty-five blooms, of twenty-five distinct varieties, named, a piece of plate or value in money:

First, Mrs. B. P. Cheney	$18 00
Second, Miss E. J. Clark	12 00
Third, Col. Charles Pfaff	8 00
Fourth, Robert Laurie	6 00

Six vases, of six named varieties, ten blooms each:

First, Mrs. A. W. Spencer	30 00
Second, Mrs. B. P. Cheney	25 00
Third, Miss E. J. Clark	20 00
Fourth, Waban Rose Conservatories	15 00

Henry A. Gane Memorial Fund.

Best twelve specimen blooms of any of the Seedling Chrysanthemums originated by the late Henry A. Gane:

First, Waban Rose Conservatories	20 00
Second, Mrs. A. W. Spencer	10 00

Society's Prizes.

Twelve blooms, Incurved, named, in vases:

First, E. S. Converse	8 00

Twelve blooms, Japanese, named, in vases:

First, Mrs. B. P. Cheney	10 00

Twelve blooms, Japanese Incurved, named, in vases:

First, Mrs. B. P. Cheney	10 00
Second, Peter B. Robb	6 00
Third, Col. Charles Pfaff	4 00

Twelve blooms, Anemone, named, in vases:

First, E. S. Converse	8 00
Second, Dr. C. G. Weld	6 00
Third, C. H. Souther	4 00

Six blooms, Incurved, named, in vases:

First, Dr. C. G. Weld	5 00
Second, E. S. Converse	4 00
Third, C. H. Souther	2 00

Six blooms, Japanese, named, in vases:

First, Mrs. B. P. Cheney	6 00
Second, Peter B. Robb	4 00
Third, E. S. Converse	2 00

Six blooms, Japanese Incurved, named, in vases:

First, Mrs. B. P. Cheney	6 00
Second, Col. Charles Pfaff	4 00
Third, E. S. Converse	2 00

Six blooms, Reflexed, named, in vases:

First, Mrs. B. P. Cheney	6 00
Second, Peter B. Robb	4 00
Third, E. S. Converse	2 00

Six blooms, Anemone, named, in vases:

First, E. S. Converse	5 00
Second, E. S. Converse	4 00

Vase of ten blooms on long stems, Pink, named:

First, Mrs. A. W. Spencer, for Viviand Morel	10 00
Second, Robert Laurie	8 00
Third, C. D. Sias	6 00

Vase of ten blooms on long stems, Red, named:

First, Mrs. A. W. Spencer	10 00
Second, Miss E. J. Clark	8 00
Third, Col. Charles Pfaff	6 00

Vase of ten blooms on long stems, White, named:
First, Mrs. A. W. Spencer 10 00
Second, Peter B. Robb 8 00
Third, Robert Laurie 6 00
Vase of ten blooms on long stems, Yellow, named:
First, Mrs. A. W. Spencer 10 00
Second, Robert Laurie 8 00
Third, Col Charles Pfaff 6 00
Vase of ten blooms on long stems, any other color:
First, Mrs. A. W. Spencer 10 00
Second, Robert Laurie 8 00
Third, Miss E. J. Clark 6 00
Vase of blooms on long stems, arranged in the Society's large China vases; prizes to be repeated every day during the exhibition:
First, Col. Charles Pfaff 10 00
Second, Mrs. A. W. Spencer 9 00
Third, E. N. Peirce & Sons 8 00
Fourth, Norris F. Comley 7 00
DAHLIAS.— Cactus, twelve blooms, named varieties:
First, W. H. Symonds 4 00
Decorative, twelve blooms, named varieties:
First, W. H. Symonds 4 00
Show, six blooms, named varieties:
First, W. H. Symonds 2 00
Second, W. H. Symonds 1 00
Fancy, six blooms, named varieties:
First, W. H. Symonds 2 00
General Display, one hundred or more bottles, in the Society's racks, arranged for effect:
First, W. H. Symonds 12 00

Gratuities:—

E. S. Converse, Display of Plumed Chrysanthemums . . . 2 00
Mrs. E. M. Gill, Display of Pompon Chrysanthemums . . . 1 00
Mrs. E. M. Gill, Display of Chrysanthemums . . . 5 00
Mrs. A. W. Spencer, Three Vases of Chrysanthemums . . 3 00
Mrs. A. W. Spencer, Two Vases of Chrysanthemums . . . 6 00
Carl Jurgens, Vase of twenty-five American Beauty Roses . . 10 00
John N. May, Rose of Mrs. Oliver Ames 2 00
M. A. Patten, Display of Carnations 8 00
James Comley, Display 8 00
John Thomas, Display 4 00
Blue Hill Nursery, Display 2 00

Awards of November 8.

Chrysanthemums.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Mrs. A. W. Spencer	10 00
Second, Col. Charles Pfaff	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

Gratuities:—

Col. Charles Pfaff, Display of Orchids	3 00
Mrs. B. P. Cheney, Display	8 00

Awards of November 9.

Chrysanthemums.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

Violets.—Single, collection of varieties, fifty blooms each:

First, Norris F. Comley	5 00

Double, collection of varieties, fifty blooms each:

First, Norris F. Comley	5 00

Awards of November 10.

Chrysanthemums.—Vase of blooms on long stems, arranged in the Society's large China vases:

First, Col. Charles Pfaff	10 00
Second, Mrs. A. W. Spencer	9 00
Third, E. N. Peirce & Sons	8 00
Fourth, Norris F. Comley	7 00

Vase of Flowers.—For table decoration, on the last day of the exhibition:

First, Mrs. E. M. Gill	4 00
Second, Miss Hattie B. Winter	3 00

SILVER GILT MEDALS.

February 2. Oakes Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Spring Exhibition, March 19–22. Mrs. F. L. Ames, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

Chrysanthemum Show, November 7–10. James E. Rothwell, first prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

SOCIETY'S SILVER MEDALS.

Spring Exhibition, March 19–22. James E. Rothwell, second prize for Display of Orchids, named species and varieties, filling not less than twenty bottles.

" " " " Anson Phelps Stokes, for Climbing Rose, Gold or Ophir.

Chrysanthemum Show, November 7–10. James Comley, for Pompon Chrysanthemums.

" " " " Col. Charles Pfaff, for largest number of first prizes for Vase of Chrysanthemums.

BRONZE MEDALS.

October 5. George McWilliam, for *Lælio-Cattleya* × *Catherine L. Whitin* var. *inversum*, and *Cattleya Harrisonii* × *Lælia purpurata*, Seedling.

Chrysanthemum Show, November 7–10. Mrs. A. W. Spencer, for largest number of second prizes for Vase of Chrysanthemums.

FIRST CLASS CERTIFICATES OF MERIT.

January 12. Harvard Botanic Garden, for *Euphorbia pulcherrima plenissima*.

" 26. H. T. Clinkaberry, Trenton, N. J., for *Cypripedium Thayerianum Trenton* var. (*C. Lawrenceanum* Pitcher's var. × *Boxallii atratum*).

" " H. T. Clinkaberry, for *Cypripedium Garret A. Hobart*, (*C. Chantinii* × *C. Lathamianum*).

" " H. T. Clinkaberry, for *Cypripedium Leeanum Mrs. Clinkaberry*, *Leeanum* var.

Chrysanthemum Show, Nov. 7–10. Peter Fisher, for Carnation Governor Wolcott.

" " " " Peter Fisher, for Carnation Nelson Fisher.

" " " " Albert Roper, for Carnation Fair Maid

HONORABLE MENTION.

January 5. J. E. Rothwell, for *Cypripedium Niobe* (*C. Spicerianum* × *C. Fairieanum*).

February 16. Harvard Botanic Garden, for *Bougainvillea speciosa* var. *splendens*.

Chrysanthemum Show, November 7–10. Peter Fisher, for Carnation Evangeline.

" " " " Peter Fisher, for Carnation Mrs. M. A. Patten

Chrysanthemum Show, November 7-10.	Peter Fisher, for Carnation Enchantress.
" " " "	D. Carmichael, for Carnation Symphony.

J. Woodward Manning,
Michael H. Norton,
Kenneth Finlayson,
Frederick S. Davis,
James Comley,
} *Committee on Flowers.*

REPORT

OF THE

COMMITTEE ON FRUITS

FOR THE YEAR 1901.

By E. W. WOOD, Chairman.

The fruits in general cultivation in New England passed the winter of 1900–1901 with comparatively little injury. The peach buds in some localities were injured more or less, but generally there were enough live buds left to produce a fair crop and the southern fruit was supplemented by an unusual amount of native fruit.

The apple crop was almost an entire failure; there was more than the usual amount of bloom for the off year but the continued cold wet weather prevented fertilization of the blossoms and the set of fruit was exceedingly light. The conditions have been favorable for a vigorous growth of the trees the past season, and barring unfavorable conditions at the time of blooming, an abundant crop may be expected the coming year.

It is conceded by intelligent fruit growers that there is no place where the pear can be grown more successfully than in the vicinity of Boston. The exhibitions of this fruit have continued to improve in quality since the change in the schedule. Instead of giving prizes for collections of twenty, fifteen and ten varieties the premiums are awarded for single dishes being more in number and larger in amount for the more desirable varieties. Among growers for market the varieties are closely confined to six or eight, several others being added for the home garden to furnish a continuous supply during the season.

Owing to the obligation to vacate the Society's building on Tremont Street and the delay in completing the present building, the Strawberry exhibition and the Summer exhibits of the small fruits were omitted the past season. The scheduled exhibition for November 7th was the first fruit exhibit in the new building and the Society has never had a finer show of late fall and winter fruits. Apples were limited in quantity but were good in quality. There was a large display of pears and many exceptionally fine specimens.

The appropriation for the Fruit Committee was seventeen hundred dollars; there have been awarded in premiums and gratuities six hundred and fifty-six dollars, leaving an unexpended balance of ten hundred and forty-four dollars.

PRIZES AND GRATUITIES AWARDED FOR FRUITS.

1901.

SPRING EXHIBITION.

March 19, 20, 21 and 22.

Winter Apples.—Baldwin:	
First, E. M. Bruce	$3 00
Second, C. F. Boyden	2 00
Third, W. H. Boyden	1 00
Northern Spy:	
First, Hiram Heyworth	3 00
Second, C. F. Boyden	2 00
Third, E. M. Bruce	1 00
Roxbury Russet:	
First, W. H. Boyden	3 00
Second, H. R. Kinney	2 00
Third, A. E. Hartshorn	1 00
Tompkins King:	
First, C. F. Boyden	3 00
Second, F. J. Kinney	2 00
Third, E. M. Bruce	1 00
Any other variety:	
First, E. M. Bruce, Sutton	3 00
Second, A. E. Hartshorn, Sutton	2 00
Third, F. J. Kinney, Palmer	1 00

WINTER PEARS.—Any variety:

First, George V. Fletcher, Dana's Hovey	3 00
Second, George V. Fletcher, Anjou	2 00

STRAWBERRIES.— One pint:

First, Francis Blake	3 00

Gratuity:—

George C. Rice, Collection of Apples	1 00

CHRYSANTHEMUM EXHIBITION.

NOVEMBER 7, 8, 9 AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

Special Prizes.

Theodore Lyman Fund.

For the heaviest and best ripened bunch of any Foreign Black Grape:

First, George McWilliam, Gros Guillaume	$15 00
Second, George McWilliam, Black Alicante	10 00

Society's Prizes.

FOREIGN GRAPES.—Two bunches Black Alicante:

First, George McWilliam	5 00

Lady Downes:

First, George McWilliam	5 00

Any other variety:

First, George McWilliam	5 00
Second, Mrs. John C. Whitin	4 00

Special Prizes.

Samuel Appleton Fund.

APPLES.—Baldwin, E. F. Locke	5 00
Hubbardston, Artemas Frost	5 00
PEARS.—Bosc, F. W. Damon	5 00
Sheldon, George V. Fletcher	5 00

Benjamin V. French Fund.

APPLES.—Gravenstein, Warren Fenno	5 00
Rhode Island Greening, A. E. Hartshorn	5 00

Marshall P. Wilder Fund.

PEARS.—Anjou:	
First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, A. K. Gould	2 00
Fourth, Warren Fenno	1 00
Bartlett:	
First, George V. Fletcher	4 00
Second, Varnum Frost	3 00
Third, J. L. Bird	2 00
GRAPES.—Concord, twelve bunches:	
First, C. F. Hayward	4 00
Second, E. E. Lincoln	3 00
Third, H. R. Kinney	2 00
Worden:	
First, H. R. Kinney	4 00
Second, J. S. Chase	3 00

Theodore Lyman Fund.

APPLES.—Baldwin:	
First, Warren Fenno	4 00
Second, J. C. Stone	3 00
Third, C. H. Teele	2 00
Fletcher Russet:	
First, George V. Fletcher	3 00
Gravenstein:	
First, L. B. Dodge	4 00
Second, J. B. Shurtleff, Jr.	3 00
Third, Mrs. A. E. Underwood	2 00
Hubbardston:	
First, E. F. Locke	4 00
Second, Artemas Frost	3 00
Third, Warren Fenno	2 00
Hunt Russet:	
First, William H. Hunt	3 00
Second, W. H. Teele	2 00
Mackintosh:	
First, George C. Rice	4 00
Second, George V. Fletcher	3 00
Third, H. K. W. Hall	2 00
Maiden's Blush:	
First, H. R. Kinney	3 00
Mother:	
First, Ellwanger & Barry	3 00

Northern Spy:	
First, J. Fletcher Stott	3 00
Second, George V. Fletcher	2 00
Third, George C. Rice	1 00
Porter:	
First, Mrs. A. E. Underwood	3 00
Second, M. W. Chadbourne	2 00
Pound Sweet:	
First, George C. Rice	3 00
Second, George V. Fletcher	2 00
Rhode Island Greening:	
First, Warren Fenno	4 00
Second, H. R. Kinney	3 00
Third, A. E. Hartshorn	2 00
Roxbury Russet:	
First, A. E. Hartshorn	4 00
Second, H. R. King	3 00
Third, H. R. Kinney	2 00
Sutton:	
First, A. E. Hartshorn	3 00
Tolman's Sweet:	
First, Artemas Frost	3 00
Second, Mrs. A. E. Underwood	2 00
Third, H. W. Anderson	1 00
Tompkins King:	
First, Oliver B. Wyman	3 00
Second, P. W. Costain	2 00
Third, George C. Rice	1 00
Washington Royal:	
Second, H. R. King	2 00
Third, A. E. Hartshorn	1 00
Wealthy:	
Third, George C. Rice	1 00
Any other variety:	
First, George C. Rice, Fallawater	3 00
Crab Apples.—Hyslop, twenty-four specimens:	
First, M. W. Chadbourne	2 00
Second, A. E. Hartshorn	1 00
Any other variety:	
First, S. H. Warren	2 00

Special Prizes offered by the Society.

Pears.—Anjou, A. K. Gould	5 00
Native Grapes.—Twelve bunches, any variety, H. R. Kinney	5 00

Regular Prizes.

PEARS.—Angouleme:

First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, Elbridge Torrey	2 00
Fourth, Warren Fenno	1 00

Bosc:

First, J. B. Shurtleff, Jr.	4 00
Second, A. T. Brown	3 00
Third, F. W. Damon	2 00
Fourth, Charles W. Libbey	1 00

Clairgeau:

First, Charles F. Curtis	3 00
Second, Warren Heustis & Son	2 00
Third, F. W. Damon	1 00

Comice:

First, Warren Fenno	3 00

Dana's Hovey:

First, A. T. Brown	4 00
Second, F. W. Damon	3 00
Third, Warren Fenno	2 00
Fourth, Warren Heustis & Son	1 00

Diel:

First, A. T. Brown	3 00
Second, J. C. Stone	2 00
Third, Warren Fenno	1 00

Fulton:

First, E. S. Converse	3 00
Second, Warren Fenno	2 00
Third, J. L. Bird	1 00

Hardy:

First, Warren Fenno	3 00

Howell:

First, Warren Fenno	3 00

Josephine of Malines:

First, Warren Fenno	3 00

Lawrence:

First, A. T. Brown	3 00
Second, Warren Fenno	2 00
Third, F. W. Damon	1 00

Louise Bonne of Jersey:

First, Warren Fenno	3 00

Marie Louise:

First, Elbridge Torrey	3 00
Second, A. T. Brown	2 00
Third, Warren Fenno	1 00

Merriam:
First, Charles E. Swain 3 00
Second, Warren Heustis & Son 2 00
Third, Warren Fenno 1 00
Onondaga:
First, Warren Fenno 3 00
Second, J. L. Bird 2 00
Third, Charles B. Travis 1 00
Seckel:
First, A. T. Brown 4 00
Second, Mrs. Charles Whittier 3 00
Third, F. W. Damon 2 00
Sheldon:
First, Elbridge Torrey 4 00
Second, A. T. Brown 3 00
Third, George E. Freeman 2 00
Superfin:
First, Warren Fenno 3 00
Urbaniste:
First, A. T. Brown 3 00
Second, J. L. Bird 2 00
Third, M. W. Chadborune 1 00
Vicar:
First, A. T. Brown 3 00
Winter Nelis:
First, A. T. Brown 3 00
Second, Warren Fenno 2 00
Any other variety:
First, Warren Fenno, Pratt 3 00
Second, Warren Fenno, St. Michael Archangel . . . 2 00
Third, Elbridge Torrey, Bezi de la Motte 1 00

QUINCES.—Champion:
First, L. F. Priest 3 00
Second, Charles S. Smith 2 00
Third, J. S. Chase 1 00
Orange:
First, George V. Fletcher 3 00
Second, Warren Fenno 2 00
Pear:
First, George V. Fletcher 3 00
Rea:
First, J. S. Chase 3 00
Second, I. H. Locke 2 00
Any other variety:
First, J. S. Chase, Meech 3 00

PLUMS.—Any variety:
First, H. R. Kinney 2 00

NATIVE GRAPES.—Six bunches of Brighton:

First, Charles W. Libbey	3 00
Second, H. R. Kinney	2 00
Third, J. S. Chase	1 00
Delaware:	
First, Charles W. Libbey	4 00
Second, J. S. Chase	3 00
Third, H. R. Kinney	2 00
Eumelan:	
Second, J. S. Chase	2 00
Herbert:	
First, Charles W. Libbey	3 00
Second, J. S. Chase	2 00
Lindley:	
First, Charles W. Libbey	3 00
Niagara:	
First, C. F. Hayward	3 00
Pocklington:	
First, H. R. Kinney	4 00
Second, J. S. Chase	3 00
Third, Charles W. Libbey	2 00
Prentiss:	
First, J. S. Chase	3 00
Any other variety:	
First, Charles W. Libbey, Moore's Diamond	3 00
Second, H. R. Kinney, Salem	2 00
Third, J. S. Chase, Diana	1 00

FOREIGN GRAPES.— Two bunches of any variety, cold house culture:

First, E. S. Converse	5 00

CRANBERRIES.—Half-peck:

First, L. J. Fosdick	3 00
Second, Charles P. Trowbridge	2 00
Third, A. L. Plimpton	1 00

Benjamin V. French Fund.

APPLES.—Baldwin, A. E. Hartshorn	5 00
Rhode Island Greening, George V. Fletcher	5 00

Society's Prizes.

APPLES.—Baldwin:

First, F. O. Barrett	3 00
Second, Warren Fenno	2 00
Third, C. H. Teele	1 00
Danvers Sweet:	
First, Warren Fenno	3 00

Fletcher Russet:
First, George V. Fletcher 3 00
Second, Charles F. Curtis 2 00
Hubbardston:
First, M. W. Chadbourne 3 00
Second, A. E. Hartshorn 2 00
Third, Warren Fenno 1 00
Northern Spy:
First, C. W. Morrill 3 00
Second, George C. Rice 2 00
Third, Warren Fenno 1 00
Rhode Island Greening:
First, Mrs. A. E. Underwood 3 00
Second, A. E. Hartshorn 2 00
Third, H. R. King 1 00
Roxbury Russet:
First, E. S. Converse 3 00
Second, A. E. Hartshorn 2 00
Third, George V. Fletcher 1 00
Tolman's Sweet:
First, George V. Fletcher 3 00
Second, Mrs. A. E. Underwood 2 00
Tompkins King:
First, George C. Rice 3 00
Second, A. E. Hartshorn 2 00
Any other variety:
First, Mrs. A. E. Underwood, Bellflower 3 00
Second, M. Martin, Bellflower 2 00
Third, A. E. Hartshorn, Sutton 1 00

Pears. — Angouleme:
First, Warren Fenno 4 00
Second, A. T. Brown 3 00
Third, J. L. Bird 2 00
Fourth, Edwin A. Hall 1 00
Anjou:
First, William Milman 4 00
Second, Warren Fenno 3 00
Third, Charles E. Swain 2 00
Fourth, F. W. Damon 1 00
Clairgeau:
First, Warren Fenno 3 00
Second, A. K. Gould 2 00
Third, J. S. Chase 1 00
Comice:
First, Warren Fenno 4 00
Second, J. L. Bird 3 00
Third, A. K. Gould 2 00

Dana's Hovey:	
First, M. Sullivan	4 00
Second, E. W. Wood	3 00
Third, Warren Fenno	2 00
Fourth, Warren Heustis & Son	1 00
Diel:	
First, Charles E. Swain	3 00
Second, A. K. Gould	2 00
Third, Edwin A. Hall	1 00
Glout Morceau:	
First, Warren Fenno	3 00
Second, Edwin A. Hall	2 00
Josephine of Malines:	
First, Warren Fenno	3 00
Second, J. L. Bird	2 00
Langelier:	
First, William H. Spooner	3 00
Second, A. T. Brown	2 00
Third, Warren Fenno	1 00
Lawrence:	
First, Charles E. Swain	3 00
Second, Warren Fenno	2 00
Third, M. Sullivan	1 00
Vicar:	
First, Mary B. Mendum	3 00
Second, E. S. Converse	2 00
Winter Nelis:	
First, Warren Fenno	3 00
Second, A. A. Johnson	2 00
Third, E. S. Converse	1 00
Any other variety:	
First, William Milman, Mount Vernon	3 00
Second, Warren Fenno, Bosc	2 00
Third, Varnum Frost, Bartlett	1 00
Quinces. — Any variety:	
First, Warren Fenno, Orange	3 00
Second, E. M. Bruce	2 00
Third, A. E. Hartshorn	1 00
Foreign Grapes. — Two bunches of any variety:	
First, Mrs. John C. Whitin, Black Alicante	5 00
Second, Mrs. John C. Whitin, Lady Downes	4 00

Gratuities: —

C. C. Shaw, Collection of Apples	5 00
C. H. Hovey, South Pasadena, Cal., Pomegranates and Persimmons	3 00

E. W. Wood,
Charles F. Curtis,
O. B. Hadwen,
Warren Fenno,
J. Willard Hill,
Sumner Coolidge,
George F. Pierce,

Committee on Fruits.

REPORT

OF THE

COMMITTEE ON VEGETABLES

FOR THE YEAR 1901.

By WARREN HOWARD HEUSTIS, Chairman.

The exhibitions held during the past year were very successful and in almost every case the prizes have been fully competed for. As a matter of fact, we have, of necessity, to repeat the exhibits from week to week, owing to the limited variety of vegetables during certain portions of the year. At the same time, we get very good specimens and the prizes are quite evenly distributed, no person succeeding in taking prizes on the same variety week after week. The interest displayed on other days than those scheduled for prizes is quite strong and we should be disappointed to see these shows given up. It was stated that we should not be able to get a full exhibit at the new hall, but we were very much gratified to find that we had every foot of space that was allotted us filled, and also had an overflow of vegetables in the basement which would have been a credit to any society, but we are sorry to say that very few people saw them.

There have been no vegetables shown that were superior or deserving of special mention over preceding years, but we would mention six lots of cauliflower grown by four different parties; we think we never saw a more uniform lot.

We are pleased to report that the Executive Committee has seen fit not to reduce the appropriation for the coming year, and we shall endeavor to keep up the usual high standard as in the past. The large exhibits from Worcester and Taunton are very gratifying and prove that where there are prizes to be awarded there will be no lack of competitors.

Five hundred and fifty-seven dollars have been awarded for prizes and gratuities during the past year, leaving a balance of six hundred and forty-three dollars, out of which a Silver Medal and a Bronze Medal are to be paid for.

PRIZES AND GRATUITIES AWARDED FOR VEGETABLES.

1901.

January 5.

Radishes.—Four bunches of any variety:

First, A. E. Hartshorn	$3 00

Salsify.—Twelve specimens:

First, W. Heustis & Son	3 00
Second, George D. Moore	2 00
Third, A. E. Hartshorn	1 00

Cucumbers.—Pair of any variety:

First, Francis Blake, White Spine	3 00
Second, Mrs. John L. Gardner, Telegraph	2 00

Cauliflowers.—Four specimens:

First, DeSouza Brothers	3 00
Second, C. M. Handley	2 00

Celery.—Four roots:

First, H. R. Kinney, Pascal	3 00
Second, A. E. Hartshorn, Pascal	2 00
Third, W. Heustis & Son, Boston Market	1 00

Lettuce.—Four heads of Tennisball:

First, Wyman Brothers	3 00
Second, J. C. Stone	2 00
Third, A. E. Hartshorn	1 00

Parsley.—Two quarts:

First, W. J. Clemson, Chappell's Matchless	2 00
Second, W. J. Clemson, Moss Curled	1 00

Mushrooms.—Twenty-four specimens:

First, H. R. Kinney	3 00
Second, E. S. Converse	2 00

Tomatoes.—Twelve specimens:

First, W. C. Winter, May's Favorite	3 00
Second, Francis Blake, Best of All	2 00
Third, W. C. Winter, Stone	1 00

Gratuities:—

A. E. Hartshorn, Collection	3 00
W. Heustis & Son, "	2 00

February 2.

Radishes.—Four bunches of any variety:

First, Varnum Frost	3 00
Second, H. R. Kinney	2 00
Third, A. E. Hartshorn	1 00

SALSIFY.—Twelve specimens:

First, George D. Moore	3 00
Second, W. Heustis & Son	2 00
Third, A. E. Hartshorn	1 00

CUCUMBERS.—Pair of any variety:

First, Francis Blake	3 00

CELERY.—Four roots:

First, George D. Moore, Pascal	3 00
Second, H. R. Kinney, "	2 00
Third, W. Heustis & Son, "	1 00

DANDELIONS.—Peck:

First, A. E. Hartshorn	3 00

LETTUCE.—Four heads of Tennisball:

First, Varnum Frost	3 00
Second, Wyman Brothers	2 00
Third, George D. Moore	1 00

MUSHROOMS.—Twenty-four specimens:

First, H. R. Kinney	3 00

TOMATOES.—Twelve specimens:

First, Francis Blake, Best of All	3 00
Second, W. C. Winter, May's Favorite	2 00
Third, W. C. Winter, Stone	1 00

Gratuities:—

A. E. Hartshorn, Collection	2 00
George D. Moore, "	2 00

FEBRUARY 9.

Gratuity:—

W. Heustis & Son, Celery	1 00

FEBRUARY 16.

Gratuities:—

A. Nixon, Celery	1 00
George D. Moore, Collection	1 00

FEBRUARY 23.

Gratuities:—

Wyman Brothers, Lettuce	1 00
W. W. Rawson, Collection	1 00

MARCH 2.

Gratuities:—

George D. Moore, Lettuce	1 00
A. Nixon, Radishes	1 00

MARCH 9.

Gratuities:—

George D. Moore, Lettuce 1 00
W. W. Rawson, " 1 00

MARCH 16.

Gratuity:—

George D. Moore, Lettuce 1 00

SPRING EXHIBITION.

MARCH 19, 20, 21, AND 22.

RADISHES.—Four bunches of Turnip Rooted:
First, H. R. Kinney 2 00
Second, Varnum Frost 1 00
CUCUMBERS.—Pair of White Spine:
First, Francis Blake 3 00
Second, E. M. Bruce 2 00
SPINACH.—Half-peck:
First, Hon. Aaron Low 3 00
DANDELIONS.—Peck:
First, A. E. Hartshorn, French Thick-leaved 3 00
Second, A. E. Hartshorn, Improved American . . . 2 00
LETTUCE.—Four heads of Tennisball:
First, George D. Moore 3 00
Second, A. E. Hartshorn 2 00
Third, H. R. Kinney 1 00
WATER CRESS.—Two quarts:
First, A. E. Hartshorn 2 00
PARSLEY.—Two quarts:
First, S. J. Goddard, Chappell's Matchless 2 00
Second, A. E. Hartshorn, Moss Curled 1 00
MUSHROOMS.—Twenty-four specimens:
First, H. R. Kinney 3 00
RHUBARB.—Twelve stalks:
First, George D. Moore 3 00
TOMATOES.—Twelve specimens:
First, W. J. Clemson, Frogmore 3 00
Second, W. J. Clemson, Best of All 2 00
Third, Miss M. S. Walker, Essex Hybrid 1 00

Gratuities:—

Hon. Aaron Low, Collection 5 00
W. Heustis & Son, " 5 00
A. E. Hartshorn, " 3 00
W. J. Clemson, " 1 00
George D. Moore, " 1 00

MARCH 30.

Gratuity:—

Hon. Aaron Low, Spinach 1 00

APRIL 6.

BEETS.—Turnip Rooted, twelve specimens:
First, George D. Moore 3 00
Second, A. Nixon 2 00
PARSNIPS.—Twelve specimens:
First, George D. Moore 3 00
Second, A. E. Hartshorn 2 00
Third, W. Warburton 1 00
RADISHES.—Four bunches:
First, A. E. Hartshorn 2 00
Second, W. W. Rawson 1 00
LETTUCE.—Four heads of Tennisball:
First, George D. Moore 3 00
Second, W. W. Rawson 2 00
Third, Wyman Brothers 1 00
CUCUMBERS.—Pair of White Spine:
First, Varnum Frost 3 00
Second, E. M. Bruce 2 00
Third, W. W. Rawson 1 00
Any other variety:
First, Mrs. J. L. Gardner 3 00
Second, E. M. Bruce 2 00

Gratuities:—

Hon. Aaron Low, Spinach 1 00
Mrs. F. L. Ames, Tomatoes 1 00
A. E. Hartshorn, Collection 1 00
George D. Moore, " 1 00
W. Heustis & Son, " 1 00
Wyman Brothers, " 1 00

CHRYSANTHEMUM SHOW.

NOVEMBER 7, 8, 9, AND 10.

☞ This was the opening exhibition held by the Society in its new halls and includes the postponed **Annual Exhibition of Plants and Flowers** and **Annual Exhibition of Fruits and Vegetables,** which were scheduled for September.

ANNUAL EXHIBITION.

SEPTEMBER 26 AND 27.

POTATOES.—Best collection new seedling varieties:

Hon. Aaron Low . . . . . The Society's Silver Medal.

For the second best:

Hon. Aaron Low . . . . . The Society's Bronze Medal.

BEETS.—Twelve Turnip Rooted:

First, E. L. Lewis, Edwards 3 00

Second, W. Heustis & Son, Egyptian 2 00

Third, A. E. Hartshorn, Edwards 1 00

CARROTS.—Twelve Long Orange:

First, A. E. Hartshorn 3 00

Second, W. Warburton 2 00

Third, W. J. Clemson 1 00

Twelve Intermediate:

First, A. E. Hartshorn 3 00

Second, W. Heustis & Son 2 00

Third, Joseph Thorpe 1 00

PARSNIPS.—Twelve Long:

First, A. E. Hartshorn 3 00

Second, W. J. Clemson 2 00

Third, George D. Moore 1 00

POTATOES.—Carmen No. 1:

First, H. E. Rich 3 00

Second, H. W. Anderson 2 00

Third, Hon. Aaron Low 1 00

Clark:

First, H. R. Kinney 3 00

Second, H. W. Anderson 2 00

Third, Hon. Aaron Low 1 00

Early Fortune:

First, H. W. Anderson 3 00

Second, Hon. Aaron Low 2 00

Hebron:

First, F. J. Kinney 3 00

Second, H. E. Rich 2 00

Third, H. W. Anderson 1 00

Rose:

First, H. R. Kinney 3 00

Second, H. W. Anderson 2 00

Any other variety:

First, F. J. Kinney, Sir Walter Raleigh 3 00

Second, Hon. Aaron Low, " 2 00

Third, H. W. Anderson, Snowflake 1 00

SALSIFY.—Twelve specimens:

First, George D. Moore	3 00
Second, W. J. Clemson	2 00
Third, H. R. King	1 00

TURNIPS.—Twelve Flat:

First, Hon. Aaron Low, White Milan	3 00
Second, Hon. Aaron Low, Purple Milan	2 00
Third, Hon. Aaron Low, Purple Strap Leaf	1 00

Swedish:

First, Charles H. Brewster	3 00
Second, H. R. King	2 00
Third, H. R. King	1 00

ONIONS.—Twelve Danvers:

First, E. M. Bruce	3 00
Second, Charles Scully	2 00
Third, W. Warburton	1 00

Red:

First, E. M. Bruce	3 00
Second, A. E. Hartshorn	2 00
Third, H. E. Rich	1 00

White:

First, H. E. Rich	2 00
Second, A. E. Hartshorn	1 00

Any other variety:

First, E. M. Bruce	3 00
Second, E. L. Lewis	2 00

SQUASHES.—Three Bay State:

First, E. L. Lewis	3 00

Hubbard:

First, J. C. Stone	3 00
Second, A. E. Hartshorn	2 00
Third, A. F. Coolidge	1 00

Hybrid Turban:

First, E. L. Lewis	3 00

Marblehead:

First, E. L. Lewis	3 00

Marrow:

First, Varnum Frost	3 00
Second, E. L. Lewis	2 00

Any other variety:

First, E. L. Lewis	3 00
Second, A. E. Hartshorn	2 00
Third, Hon. Aaron Low	1 00

CUCUMBERS.—Pair of White Spine:

First, W. A. Bruce	3 00

Any other variety:

First, W. A. Bruce, Hybrid	3 00
Second, Mrs. J. L. Gardner, Telegraph	2 00

WATERMELONS.—Two specimens:

First, E. L. Lewis	3 00
Second, J. F. Jones	2 00
Third, Joseph Thorpe	1 00

BRUSSELS SPROUTS.—Half-peck:

First, Mrs. J. L. Gardner	3 00
Second, A. E. Hartshorn	2 00

CABBAGES.—Three Drumhead, trimmed:

First, E. L. Lewis	3 00
Second, E. L. Lewis	2 00
Third, A. E. Hartshorn	1 00

Red:

First, H. E. Rich	3 00
Second, E. L. Lewis	2 00
Third, E. L. Lewis	1 00

Savoy:

First, J. C. Stone	3 00
Second, W. Warburton	2 00
Third, E. L. Lewis	1 00

CAULIFLOWERS.—Four specimens:

First, DeSouza Brothers	5 00
Second, C. M. Handley	4 00
Third, H. E. Rich	3 00

CELERY.—Four roots of Paris Golden, best kept during the exhibition:

First, J. C. Stone	5 00
Second, A. E. Hartshorn	4 00
Third, A. F. Coolidge	3 00

Any other variety:

First, W. Heustis & Son, Pascal	5 00
Second, A. E. Hartshorn, Boston Market	4 00
Third, W. Warburton, White Plume	3 00

ENDIVE.—Four specimens:

First, A. Nixon	3 00
Second, A. E. Hartshorn	2 00
Third, E. L. Lewis	1 00

LETTUCE.—Four heads:

First, Varnum Frost, Big Boston	3 00
Second, George D. Moore, Tennisball	2 00
Third, J. C. Stone, "	1 00

PARSLEY.—Two quarts:

First, W. J. Clemson, Matchless	2 00
Second, W. J. Clemson, Champion	1 00

HORSERADISH.—Six roots, present year's growth:

First, H. R. Kinney	2 00

CORN.—Yellow or Field, twenty-five ears, traced:

First, B. P. Winch	3 00
Second, Elliott Moore	2 00
Third, L. C. Linscott	1 00

Sweet, twelve ears:

First, H. R. King	3 00
Second, Charles Scully	2 00
Third, H. W. Anderson	1 00

TOMATOES.—Twelve Aristocrat:

First, W. Warburton	3 00

May's Favorite:

First, Hon. Aaron Low	3 00
Second, W. Heustis & Son	2 00

Stone:

First, Hon. Aaron Low	3 00
Second, Joseph Thorpe	2 00

Any other variety:

First, Hon. Aaron Low, Enormous	3 00
Second, Hon. Aaron Low, Combination	2 00

PEPPERS.—Twelve specimens of Squash:

First, Hon. Aaron Low	3 00
Second, A. Nixon	2 00

Any other variety:

First, Hon. Aaron Low, Bull Nose	3 00
Second, Hon. Aaron Low, Ruby King	2 00
Third, Joseph Thorpe, Giant	1 00

CULINARY HERBS, GREEN.—Collection, named:

First, W. J. Clemson	5 00
Second, W. Warburton	4 00

NOVEMBER 10.

PARSNIPS.—Twelve specimens:

First, Varnum Frost	3 00
Second, A. E. Hartshorn	2 00
Third, H. R. King	1 00

SALSIFY.—Twelve specimens:

First, Varnum Frost	3 00
Second, H. R. King	2 00

CUCUMBERS.—Pair:

First, E. L. Dorr	3 00
Second, E. L. Dorr	2 00
Third, Mrs. J. L. Gardner	1 00

CABBAGES.—Three Red, trimmed:

First, A. E. Hartshorn	3 00
Second, H. E. Rich	2 00

Savoy:	
First, A. E. Hartshorn	3 00
Brussels Sprouts.—Half-peck:	
First, A. E. Hartshorn	3 00
Second, A. E. Hartshorn	2 00
Third, C. W. Parker	1 00
Cauliflower.—Four specimens:	
First, C. M. Handley	3 00
Second, W. H. Teele	2 00
Third, DeSouza Brothers	1 00
Celery.—Four roots:	
First, Joseph Thorpe	3 00
Second, W. Heustis & Son	2 00
Third, A. F. Coolidge	1 00
Lettuce.—Four heads:	
First, Varnum Frost	3 00
Second, A. E. Hartshorn	2 00
Tomatoes.—Twelve specimens, grown under glass:	
First, W. C. Winter, Combination	3 00
Second, W. C. Winter, Stone	2 00
Third, E. L. Dorr, Essex	1 00

Gratuities:—

N. W. T. Knott, Gourds	1 00
C. W. Parker, Display	2 00
E. L. Lewis, Collection	10 00
W. J. Clemson, "	5 00
A. F. Coolidge, "	5 00
W. Heustis & Son, "	5 00
Hon. Aaron Low, "	5 00
George D. Moore, "	3 00
A. Nixon, "	5 00
W. Warburton, "	5 00

Warren Howard Heustis,
Cephas H. Brackett,
Varnum Frost,
Walter Russell,
Aaron Low,
George D. Moore,
Joshua C. Stone,

Committee on Vegetables.

The Gov. Oliver Ames Estate at North Easton.

REPORT

OF THE

COMMITTEE ON GARDENS

FOR THE YEAR 1901.

By PATRICK NORTON, Chairman.

Your Committee has been very active during the year just closing, and has visited a large number of places, and the knowledge thus gained of the different methods employed in the cultivation of plants will be useful not only to the Committee, but to all who read this report. We will take the places visited in rotation, and describe in as brief a manner as possible the later or newer methods adopted to bring about the success each grower aims to accomplish.

W. W. Rawson's Lettuce House, Arlington.

The first place visited (February 21, 1901) was that of W. W. Rawson at Arlington, who has thirty-five large greenhouses and two thousand sashes of hotbeds, mostly devoted to the growing of lettuce, radishes and cucumbers for the market. Here we saw for the first time the process of sterilizing the soil in which the plants were grown. This process is no doubt a great benefit, as the immense steam heat which permeates every portion of the soil kills all germs of fungi deleterious to plants and all seeds of weeds as well, thus leaving the soil in splendid condition for a year's cultivation. This process is to be commended.

Lettuce plants were in all stages of development, from the planted seeds just appearing above ground to the large perfect heads ready for market. The house we were asked to scrutinize

was four hundred feet long and fifty feet wide and contained thirty-seven thousand plants averaging over one foot in diameter, a remarkable showing of splendid plants. Another house containing cucumbers was very fine, and the plants very vigorous and heavily set with fruit.

Peter Fisher's Carnation House, Ellis.

The second place visited (March 14, 1901) was that of Peter Fisher, at Ellis. His specialty is the growing of carnations. He had several houses of these plants, and in some of them he was testing the qualities of the best plants sent out by different growers, and also, to a greater extent, testing numerous seedlings of his own production. He is a very enthusiastic cultivator of carnations and has put upon the market the best one yet produced in America; wherever it has been exhibited it has taken first prize over all others, and when we saw it growing on the benches we ceased to wonder at its success. The house entered was three hundred and two feet long by twenty-three feet wide and presented the finest appearance of any house of carnations your Committee ever saw. The flowers and buds were more numerous and the expanded flowers were larger and of more perfect shape and color than any we ever saw before. There were no expanded flowers in the house that would measure less than three inches in diameter, and from that up to four inches, with upright stems holding the flowers in a presentable condition.

Mr. Fisher submits a description of his principal house for growing carnations, as follows:

House of modern construction, three hundred and two feet long, twenty-three feet wide, and twelve feet high to ridge running north and south. Continuous ventilators each two feet wide, on both sides of ridge. Benches five feet wide, lengthwise of house, with a walk eighteen inches wide next to walls. Benches rest on three-quarter inch iron pipe. Woodwork, cypress. Glass, 16 x 24. Cement walls, in which are set one and one-half inch iron posts to sustain the structure.

Compost consists of sods from old pasture, well rotted, with a liberal addition of ground bone, lime and stable manure in about equal quantities. The plants were transferred from the open

Peter Fisher's Carnation House at Ellis. The Mrs. Thomas W. Lawson Carnation.

ground to the benches about the middle of August, and the first stimulant was given late in November, in the form of a light top dressing composed of half soil, and half pulverized sheep manure and bone meal. Air-slaked lime was freely applied when the soil showed signs of becoming sour.

The temperature was 52° to 55° during the night, with a rise of 15° to 20° during the day.

The principal crop consisted of :

3,000	plants	Mrs. Thomas W. Lawson,
1,000	"	Maine,
1,000	"	Eastern Star,
500	"	The Marquis,
500	"	Mrs. George M. Bradt.

Steam was used for heating the house with four one and one-quarter inch pipes on each side and one one and one-quarter inch pipe under each bench.

Mr. Fisher entered for the best House of Carnations.

Mrs. David Nevins's Estate, Methuen.

The next visit which occurred on June 20th, was to the beautiful old estate of Mrs. David Nevins, at Methuen. This estate, occupied by the ancestors of Mrs. Nevins in the eighteenth century, was now undergoing extensive repairs and improvements, but the admirable features of the old mansion were being preserved. The shrubbery, which forms one of the great charms of the place, was in splendid condition, owing principally to the unremitting vigilance of the owner. The place is surrounded by noble elms interspersed with clumps of fine shrubbery, and the Spicket River, flowing through velvety green banks on one side of this estate, makes it a very attractive homestead, while the view from the summerhouse over an expanse of meadow and far away, gives a charm of restful pleasure to the place not exceeded anywhere.

Warren H. Heustis's Strawberry Garden, Belmont.

On June 26th the Garden Committee visited the fruit and vegetable farm of Warren H. Heustis, at Belmont, to inspect his strawberry garden and to pass upon the quality of the fruit. It

would appear that Mr. Heustis cannot any further improve upon the size or quality of strawberries, for those we saw and tested were as near perfection as they can be grown in this part of the country; expert growers from other towns were of the same opinion as your Committee. The kinds mostly cultivated were the Marshall and Belmont. The latter originated on this farm, and still retains the good keeping qualities, large size and fine flavor it had when first shown. We congratulate Mr. Heustis on knowing how to grow good strawberries.

George D. Moore's Cucumber House, Arlington.

On June 27th we visited Arlington to inspect a house of cucumbers as grown by George D. Moore & Son. The house was two hundred and forty feet long by thirty-five feet wide, and contained about six hundred plants well set with fruit and in vigorous health. From the good condition of this house we infer that these people have not forgotten how well their house looked two years ago, and, taking that as their standard of excellence, have this year fully equaled their pattern. The vegetable garden was of the usual type of the market gardener, and showed good cultivation and a very thrifty appearance. We append Mr. Moore's letter giving his method of growing crops.

Patrick Norton, *Chairman Committee on Gardens*;

Dear Sir: — Complying with your request to make a statement concerning methods pursued in reaching the high state of cultivation in which you found my farm or market garden when visiting me last summer, let me say to start with that this subject has been so frequently and ably treated by those better qualified than myself to write upon it, that I hesitate to attempt to make you a statement fearing that I shall fail to do either myself or the subject justice. But as you have awarded me the first premium it is but just that you should demand of me some explanation of the methods pursued. So I will briefly tell my story.

To begin with I am largely indebted to a generous water supply. In the fall of 1900 I secured the services of Morton & Waugh of Boston to provide me a water supply that would furnish enough, not only for my four large greenhouses and one thousand hotbed sashes, but for ample outside irrigation in my seventeen acre garden; to say they fully succeeded hardly does them justice for of the four two and one-half inch wells put down

The Gov. Oliver Ames Estate at North Easton.

(one struck a rock and was abandoned), three at the depth of fifty to sixty feet furnished a bounteous supply of the purest and best of water. A Dean steam pump of four inch suction, throwing nearly two hundred gallons per minute night and day enabled us to water thoroughly both the crops and the land before planting; also to wet down the fresh strawy horse manure as brought from city stables forcing the rotting, and aiding its preparation for the soil.

On much of my land I raise two or three crops, sowing early spinach and as soon as the ground is in condition to cultivate there follows a crop of beets with every fifth row left for celery; or, I plant the early beets for a first crop, carefully preparing the soil by plowing and harrowing, then a fair dressing of stable manure is lightly plowed in and well rotted if possible, supplementing the manure by one-half a ton to the acre of some reliable phosphate (we have found nothing better than Bowker's or Stockbridge Specials). I rake this in thoroughly after the last plowing. This is practically my method with all crops except tomatoes, parsnips, carrots etc.; these crops do not need fertilizing so liberally. If at any time you wish me to give you a statement of my management of hotbeds, or a more minute explanation of my treatment of any special outside crop, please command me.

George D. Moore,
M. Ernest Moore, *Proprietor and Manager.*

Estate of H. H. Rogers, Fairhaven.

The sixth place visited was that of H. H. Rogers, at Fairhaven. This estate is entered in competition for the H. H. Hunnewell Triennial Premium, and this was the Committee's first visit. It consists of eight acres of reclaimed land on the borders of the sea which separates Fairhaven and New Bedford. The situation is very much exposed to the winds from the ocean, but the caretaker, Mr. James Garthley, has so judiciously laid out the grounds and carefully planted the trees, shrubs and flowers as to make it a beautiful home for the owner.

The Oliver Ames Estate.

On August 13th the Committee was called to view the Oliver Ames estate, at North Easton. This estate is entered for the H. H. Hunnewell Triennial Premium, by Mr. Oakes Ames, son of the late Governor, and this is the third year of inspection. The

whole estate was in very fine condition. The grand old trees, which were planted by the late Governor of this Commonwealth, were in better condition than ever before, and their appearance indicated that they were receiving the kind care essential to good healthy growth. The lily ponds were resplendent with blooms of all sorts of aquatics from the four quarters of the globe, and presented a grand appearance. This estate shows not only the constant change going on in the vegetable products that are being gathered from all parts of the world for scientific and ornamental purposes but accessions are continually being made by importations and Mr. Ames's own hybridizations, thus making the place actually a botanic museum of living plants.

Estate of C. H. Tenney, Methuen.

On September 27th we visited "Greycourt," the regal estate of C. H. Tenney, at Methuen. This estate was entered for the H. H. Hunnewell Triennial Premium, and this is the second year of entry. The last year's Transactions, Part II, contains a photograph of this estate which appeals to the eye better than any language can portray its beauties. Mr. Tenney is constantly improving his ground by judiciously cutting out trees and shrubs where they have grown so large as to interfere with each other, thus giving the more valulable one room to expand and also a longer lease of life. He is also constructing on the north side of the hill on which the house stands a splendid bowling green, the first in New England, with all the accessories to make the sport of bowling on the turf a pleasant and agreeable exercise and a joy forever to those who believe in athletic sports.

W. P. Lothrop's Dahlia Garden, East Bridgewater.

The next visit, which occurred on September 30th, was to the dahlia farm of W. P. Lothrop, East Bridgewater. This farm consists of four acres and was planted with about four hundred varieties of dahlias — growing from twenty thousand hills. New varieties of special merit are constantly being added and sixty new kinds were acquired this year. They are of every conceivable description, but it seems that the variety described as the

The Chrysanthemum House of Hon. E. S. Converse, Malden.

Cactus dahlia is the most sought for. Mr. Lothrop planted a bed of four hundred plants at the Paris Exposition last year and received for the display a medal. The roots will be stored during the winter, packed in dry sand.

Waban Rose Conservatories, Natick.

On Monday, November 4th, the Committee visited the extensive Waban Rose Conservatories at Natick. The whole plant is under the care of Alexander Montgomery, and when we say this and have seen the contents of the houses, we know that Mr. Montgomery understands how to grow roses. The rose bushes were perfectly free from insects and mildew and presented the finest show of buds and flowers conceivable. Only a few kinds were grown, and those were the ones most sought for by dealers; they consisted of The Bride, Bridesmaid, American Beauty, Morgan, Liberty, Madame de Watteville and Helen Gould. Some of the houses contained sixty-five hundred plants, and when we looked over the beds of luxurious bloom seven hundred feet in length we began to wonder where all the roses go to, but these were so well grown and splendidly finished that there was no difficulty in disposing of all at remunerative prices. The Proprietors contemplate building another house seven hundred and fifty-two feet long by fifty-two feet wide, in the near future, so as to enable them to grow a few more roses.

Estate of Colonel Charles Pfaff, South Framingham.

The next visit was to the elegant estate of Colonel Charles Pfaff, South Framingham, on November 4th, to inspect a house of chrysanthemums grown on benches. Six hundred and fifty plants comprising seventy varieties, with one flower on each plant were a beautiful sight, and the gardener, Mr. George Melvin, was complimented by the Committee for his efficiency in producing such fine blooms.

Estate of E. S. Converse, Malden.

On November 5th the Committee visited the estate of The Hon. E. S. Converse, at Malden, to inspect his two chrysanthemum

houses in which the plants are grown in pots and arranged with other plants for effect. This plan makes the houses look beautiful, and the gardener, Mr. D. F. Roy, has certainly accomplished the object striven for. The chrysanthemums were arranged on each side of the path lengthwise of the houses, with handsome foliage plants intermixed. The standard chrysanthemum plants were placed at stated intervals, which added very materially to the beauty of the houses.

Mrs. A. W. Spencer's Chrysanthemum House, South Framingham.

On November 6th the Committee was called to inspect a house of chrysanthemums grown on benches by Alexander McKay, gardener to Mrs. A. W. Spencer, of South Framingham. There were in this house four hundred plants in sixty-two varieties, grown to one flower each. The flowers were splendidly grown, of very large size and well finished.

Estate of Frederick Parker, Bedford.

On the 13th of November the Committee visited the Shawsheen River Farm of Frederick Parker, at Bedford, to inspect crops of cucumbers, tomatoes and lettuce. There were three houses, three hundred feet long by thirty-six feet wide, each of which would contain nineteen thousand four hundred and forty-eight plants of lettuce. One of these houses was used for propagating seeds of all kinds till late in the spring, when it was planted to cucumbers. Two other houses, three hundred and fifty feet long by thirty-six feet wide, each contained twenty-two thousand four hundred and forty lettuce plants nearly ready for the market. Another house of lettuce was three hundred and thirty feet long and thirty-six feet wide and contained twenty-one thousand, seven hundred and thirty-six lettuce plants. In another house were growing three hundred and eighty hills of cucumbers, set two and one-half feet apart; these were not a great success, although a fair crop had matured and was being harvested.

The tomato house was one hundred and forty-six feet long by thirty-six feet wide, and contained five hundred and sixty-eight

plants in the most flourishing state of any tomato house we ever saw. The seed was sown on the 8th of July, and when the plants were large enough to handle they were potted into small pots; as the plants grew and filled the pots with roots, they were "potted on" till the first fruit was set, then transferred to the fruiting beds in the house, which were sixteen inches deep and very rich. Here they were trained to one stem and showed more fruit than any house we ever saw. The first picking began in early November. The variety was Henderson's Freedom. Our attention was called to a small house twenty-five feet long by twenty feet wide, which was full of tomato vines and had been planted nearly one year and was now showing a fair crop of fruit. The soil used in these houses was thoroughly sterilized and the rotation generally followed was three crops of lettuce and a crop of cucumbers. The whole plant was in fine condition and reflected very much credit on Mr. C. A. Learned, the manager.

R. & J. Farquhar's House of Begonia Gloire de Lorraine, Mount Hope.

The last place visited was at Mount Hope. The greenhouses belong to R. & J. Farquhar & Co. and William Donald is manager. The object of our visit was to inspect a house of begonias of the Gloire de Lorraine type. This house contained more than ten thousand plants of all sizes, and presented a grand appearance. There were the original pink, the newer white Caledonia, and the Compacta, a new variety originated here. These plants were grown at as cool a temperature as possible, so that they would withstand being transferred to dwelling houses. They make very handsome house plants for they are always in bloom. The Committee did not confine themselves to admiring the begonias, but strolled over the different houses and got some ideas of what Mr. Donald was trying to accomplish. His palm house was very fine and contained palms of all ages and sizes. Probably the most useful work Mr. Donald is doing is the propagating of a new rose originated by Jackson T. Dawson. This rose is a cross between the Wichuraiana and the Crimson Rambler, both of which are runners, but this new Farquhar rose will excel them

both in this respect. During the past four months over a thousand plants have been propagated, but they will not be put on the market till a large stock is accumulated. This rose is getting a splendid reputation from eminent gardeners who have seen it in bloom.

The Farquhars are preparing to erect more glass houses early in the spring, to accommodate their ever increasing business.

The Prizes and Gratuities awarded this year, are as follows:

H. H. Hunnewell Triennial Premium.

For an estate of not less than three acres, which shall be laid out with the most taste, planted most judiciously, and kept in the best order for three consecutive years,
First, The Oliver Ames Estate $160 00

Special Prizes from the John A. Lowell Fund.

For the best house of Chrysanthemums grown on benches:
First, Mrs. A. W. Spencer 30 00
Second, Col. Charles Pfaff 20 00
For the best House of Chrysanthemums with other plants arranged for effect, in pots:
First, E. S. Converse 30 00
Second, E. S. Converse 20 00

Society's Prizes.

For the best House of Carnations:
First, Peter Fisher 30 00
For the best House of Roses:
First, Waban Rose Conservatories, American Beauties . . 30 00
Second, Waban Rose Conservatories, Assorted Teas . . 20 00
For the best Vegetable Garden:
First, George D. Moore & Son 30 00
For the best House of Lettuce:
First, W. W. Rawson 30 00
Second, Frederick Parker 20 00
For the best House of Cucumbers:
First, George D. Moore & Son 30 00
For the best Strawberry Garden:
First, Warren H. Heustis 30 00

The Gov. Oliver Ames Estate at North Easton.

Gratuities.

Mrs. David Nevins, Estate	25 00
W. P. Lothrop, Dahlia Garden	20 00
R. & J. Farquhar & Co., House of Begonia Gloire de Lorraine	25 00
Frederick Parker, House of Tomatoes	25 00
C. A. Learned, Superior Cultivation of Tomatoes under glass	Silver Medal

Respectfully submitted,

PATRICK NORTON,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN H. HEUSTIS,
J. H. WOODFORD,
JACKSON T. DAWSON,
HENRY W. WILSON,
Committee on Gardens.

REPORT

OF THE

Committee on School Gardens and Children's Herbariums

FOR THE YEAR 1901.

By HENRY LINCOLN CLAPP, Chairman.

Even a brief consideration of the work for which this Committee stands will take us not only out of Massachusetts but out of New England as far as the Central States where we may find an extraordinary example of what may be done in training boys to habits of industry, teaching them to respect the rights of others, and making them instrumental in improving their neighborhood on a vast scale.

BOYS' GARDENS IN DAYTON, OHIO.

The boys' gardens established by the National Cash Register Company deserve a more extended notice than can be given in this report. There were forty gardens last year, but the increased demand necessitated seventy-four plots this year, each ten by one hundred and thirty feet in size, two and one-fifth acres in all. The cost of the land and the cultivation of it one year was $3500. The boys average about twelve years of age, and complete the course in gardening in two years, when each receives a certificate to the effect "that ——— has been instructed in the National Cash Register Company's Garden Work, and has been faithful and proficient in the same."

The certificates are signed by Mr. J. W. Patterson, the president of the Company. His own two children, Frederick and

Dorothy, as well as his nephew and niece, are also proficient in gardening, showing that what he believes to be good for other children he thinks is just as good for his own. He thinks it is possible for boys to go to school too long and so become bookish and out of touch with the active business world; and he rates his experience on the farm more valuable than anything he ever learned at school, valuable as the latter undoubtedly was.

The result of this garden work has been most extraordinary. Slidertown was one of the worst parts of the city; now it is one of the very best, and its change of name to South Park is indicative of the change wrought in every condition. Three of the worst boys were gotten rid of, and "the rest were formed into clubs and brigades, and were given gardens and taught to respect themselves and the rights of others." Then land rose from $300 a lot to three times that amount; and the $3500 put into the garden work carried on by the boys is said to be the best investment for the money that the Company ever made.

In spite of the strike among the ungrateful employees of the Company and the long droughts a great amount of garden stuff was raised; namely, 814 dozen onions, 1332 dozen radishes, 962 dozen beets, 1258 dozen carrots, 481 dozen ears of sweet corn, 9 bushels of seed onions, 56 bushels of peas, 74 bushels of wax beans, 62 bushels of butter beans, 79 bushels of potatoes, 111 bushels of tomatoes, 9 bushels of sweet potatoes and 2590 heads of cabbage.

The land, tools, seeds and instructor were furnished by the Company. Most of the boys supplied their families with vegetables during the summer, and many earned enough money by the sale of vegetables not needed at home to pay for their school books.

The boys were given a supper, ten money prizes amounting to $35, five prizes each in the form of the Youth's Companion for a year, bronze medals and a stereopticon lecture by the president, Mr. Patterson.

Such an example is most worthy of imitation by other companies and associations having in view the uplifting and proper training of boys.

SCHOOL GARDENS, SCHOOL OF HORTICULTURE, HARTFORD, CONN.

The principals of three public schools selected ten boys apiece to work the beds prepared for them. The boys were furnished with tools, seeds, plants to set out, four-foot measuring sticks, twelve inch labels for the beds, note-books, pencils, etc. The number on the bed label corresponded with that on the note-book. In the note-book each boy drew a plan of his plot, wrote out the

directions he received as to how his seeds should be planted and his plants cared for, and kept his attendance.

If a boy was absent twice in succession without excuse he ran the risk of losing his garden, as there were always plenty of boys on the waiting list ready to take forfeited gardens. Sixty-five per cent of the gardens did not change hands. Three of the beds changed three times apiece. Six of the delinquents said it was too far; two got tired; and two were delinquent even on excuses. Several boys had to come two or three miles, and a few of these never missed a lesson. Some of them stuck to their work although on three occasions it rained at intervals of a few minutes — and besides it was on Saturday when they worked. That showed commendable zeal.

The whole cost of the garden work (not including instruction and rent of land) was $47.33. The Civic Club voted to appropriate $25 in prizes for the following products: $1.00 each for the three best gardens, three best books, best ear of corn, vine of shell beans, vine of wax beans, beets, tomatoes, summer squash, watermelons and musk melons, bunch of verbenas, bunch of radishes and best essay of one hundred words on garden work, with second prizes for some of the things.

The judging was done by two prominent and competent men, Mr. George A. Parker, Superintendent of Keney Park, and Mr. Theodore Wirth, Superintendent of City Parks.

The nineteen boys who won prizes made an exhibit of the vegetables they had raised; and with the eatables to look at, the speeches to listen to, and the prizes to carry off, the occasion was an enjoyable one for the boys.

As a result of the summer's work the Committee says: "One of the churches here in the city has already cleared up an unsightly back yard, put up a new fence, plowed the ground, and proposes to have a class of the older Sunday School boys work in the garden thus formed and grow flowers for the use of the church and the sick.

"If the boy's time thus taken kept him usefully employed when he might otherwise have been running the streets or sowing the seeds of future crime, if he received lessons in industry, if he has

learned things that will be of use to him later in life, if his health has been improved by being in the open air, if a love of things beautiful and a desire to search the mysteries of nature have been awakened within him; if he is better able to see what he looks at and understand what he sees, he will be broader in view and a better citizen, and his work in the allotment garden will not have been in vain."

SCHOOL GARDEN, BATH, MAINE.

Mr. Henry L. Clapp,

Dear Sir: The generosity of your Committee enabled me to add to our school garden the following plants:

Adiantum pedatum,
Aspidium Filix-mas,
Asplenium platyneuron,
Aquilegia oxysepala,
Aster alpinus,
" *Chapmani*,
" *lævis*,
" *Sibiricus*,
Cypripedium pubescens,
" *spectabile*,
Onoclea Struthiopteris,
Sanguinaria Canadensis,
Spiræa lobata,
Viola Alpestris,
" *pubescens*,
" *rostrata*.

The garden has been used by the botany class more this year than in any previous years. The pupils made a careful study of the plants as they appeared. They recorded the growth from day to day and made many good drawings of the plants in their various stages. Much interest was shown in the ferns, of which there are at present twenty species.

Very truly yours,

Viola G. Hogan.

SCHOOL GARDEN OF THE TWENTIETH CENTURY CLUB, BOSTON.

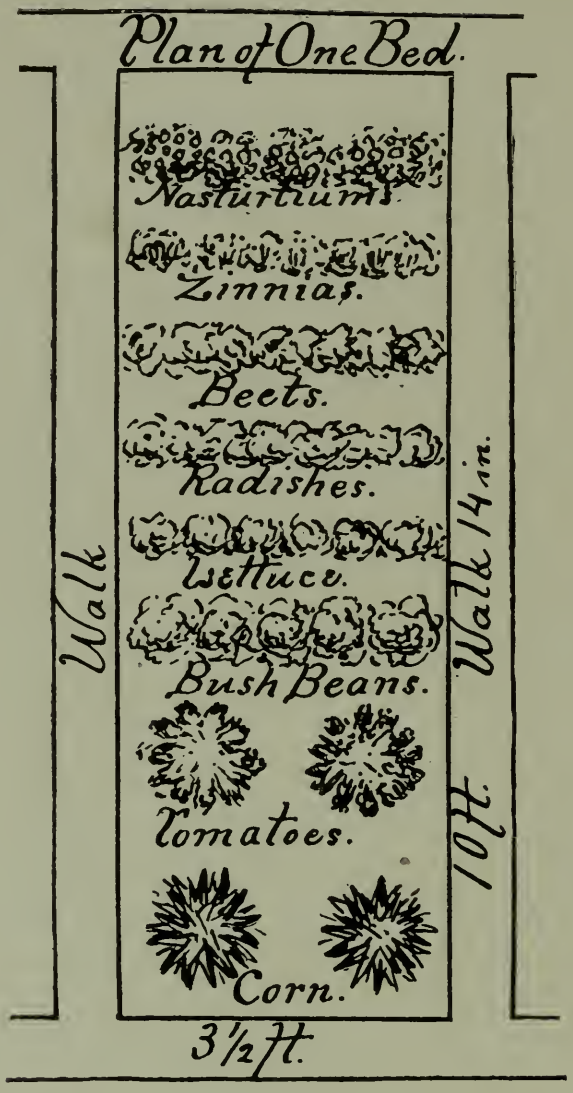
Last spring (1901) a school garden containing eighty-two beds was established in the yard of the English High School on Dartmouth Street, Boston. It has been given the above title because two lady members of the Club were foremost in establishing it and

the Club paid the expenses of it,—$50 to the gardener, $25 to the young lady who instructed the pupils during the summer vacation, and $17 for preparing the ground, laying out the beds for planting and miscellaneous expenses—$92 in all. Some tools and seeds were given by Joseph Breck & Sons.

Boys from the Rice School and girls from the Franklin School in about equal numbers, enjoyed the privilege of raising vegetables and flowers in this garden. The girls of the Normal School received instruction in garden work last summer in this garden instead of instruction in geology which they have had in previous years. So those who are preparing to teach will be equipped with the theory and practice of raising vegetables and flowers. That is an excellent beginning in the right place and in the right way. It must be borne in mind that there is behind this enterprise a club with money and meaning business. Thirteen dollars' worth of photographs of the garden is one indication of an intention to do a good thing even if it does cost a little money. The Club will bear the expenses of the garden another year, at least.

THE GEORGE PUTNAM SCHOOL GARDEN, BOSTON.

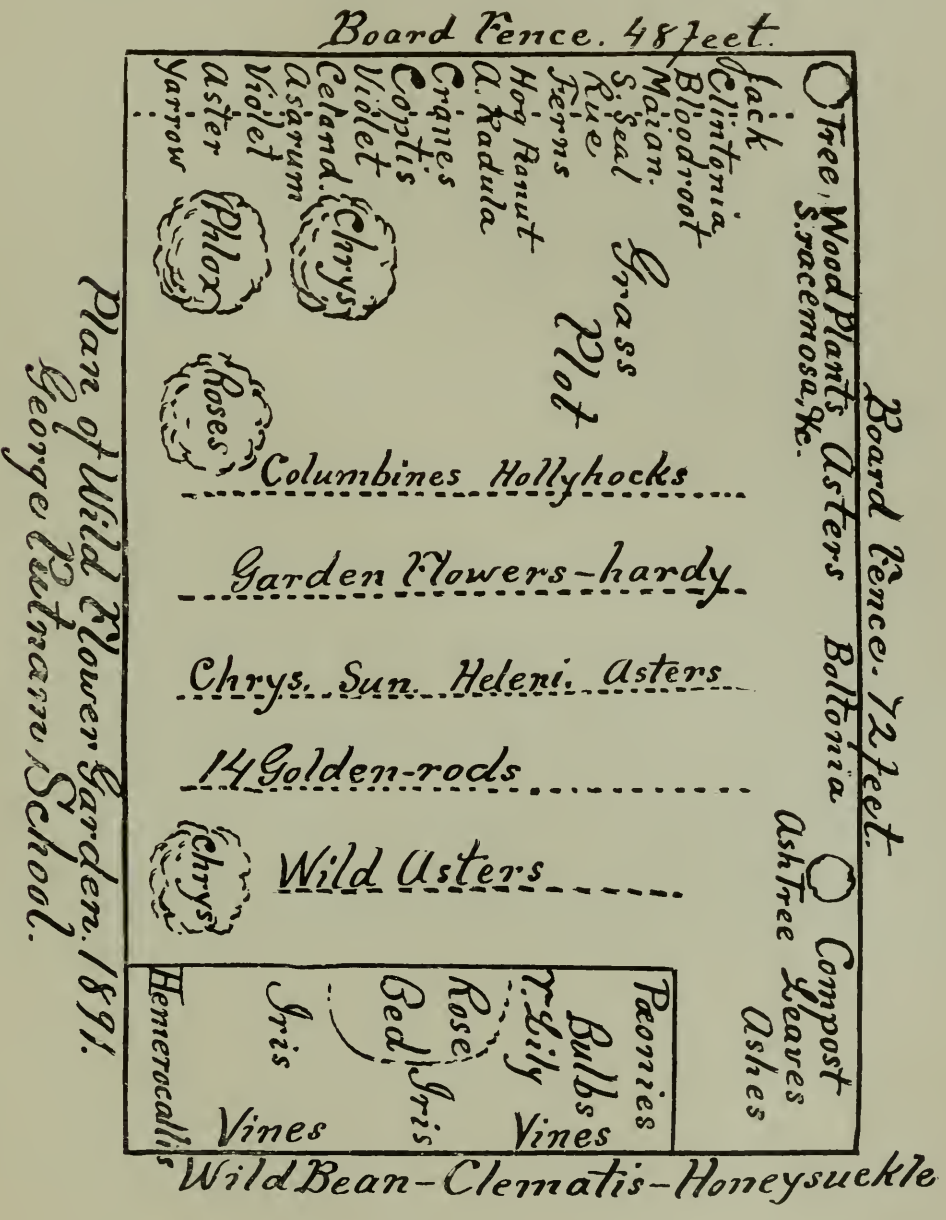
The second season of the kitchen garden on the grounds of the George Putnam School closed about November 1, 1901, when the pupils finished planting their bulbs for spring blooming. Here is a garden with more beds (eighty-four) than any other garden yet mentioned, which was laid out without expense to any one outside of the school, as a friend ploughed it free of charge and the children made all the beds out of the rough field of sods. They bore the expense of tools and seeds and did all the work. There were no special inducements to ensure faithful work—I wish there might have been—nevertheless, some of the pupils came regularly every week on Monday afternoon without any adult to meet and instruct them, and did not allow a single weed to be seen in their beds. They watered their plants when necessary, carried home lettuce, radishes, corn, kohl-rabi, beets, and other vegetable roots and flowers, and had their beds looking "spick and span" when the school opened in September. They just loved to do it. One



girl wrote in her composition that she preferred gardening to anything she studied in school; and yet she was a good scholar.

There were many delinquents. No doubt some were constitutionally weary; some decided that a vacation was a very improper time to double up one's back like an inch-worm in order to pull weeds; some of them could run like hares on the "gridiron" and drip with sweat without thinking of it. But when school opened, delinquents and all took hold and eradicated all the weeds, perambulated with the water pots, straightened the beds and paths,

squinted with one eye half open, and put their wits to work generally. In a short time the existence of weeds during the summer would never have been suspected by the casual observer.



During October there was a fine display of hardy chrysanthemums, some red and some yellow, and sneezeweeds (*Helenium autumnale*) which had been planted by the hundreds in the pre-

ceding spring. Generally each pupil had a red chrysanthemum in one end of his bed, and a yellow one in the other, and a sneezeweed in the middle. Since all blossomed profusely the garden was glorious with color.

As usual the material in the wild flower garden, which was begun in 1890, (see plan on opposite page), has been used in school in nature study and designing. A number of lantern

Pupil's Surface Design from Columbine, George Putnam School.

slides of designs based on the sneezeweed have been made. Many photographs of the pupils engaged in garden work have been taken, and half-tone prints from them are expected to appear as illustrations of an article on "A Boston School's Kitchen Garden" in the June number of the New England Magazine.

It may be mentioned in this connection that one hundred reprints of the article will be sent and given to persons interested in following out the work of this Society. Just a year prior to

the appearance of the article just mentioned, or in May, 1901, the Chairman of the School Garden Committee wrote a sixteen page article on school gardens for the monthly magazine "Education" and had two hundred reprints struck off for distribution in preference to receiving cash for remuneration. The work is meritori-

Composite Flowers in Wild Flower Garden, George Putnam School.

ous enough to warrant the expenditure of time and skill in writing, photographing, lantern-slide making and actual currency of the nation.

INTEREST IN SCHOOL GARDENS INCREASING.

Immediately following the last Herbarium Exhibition this appeared in the editorial columns of the Transcript: "It does not seem that any statement should be necessary to show the ad-

vantages of school gardens. Besides training habits of observation, garden work keeps children off the streets, cultivates habits of industry and respect for other people's gardens, gives the children a love of nature and turns their attention toward the blessings of out-door life as an offset to the strong current toward the life of the shops and the tenements. Window gardens in the home follow school gardens, and bring added sweetness to life. If the masters of the Boston schools would make more effort in this direction and were better supported by a Board of Education working in sympathy with the Massachusetts Horticultural Society, the children of the public schools would learn something that would be of quite as much value as much that they learn from books, and the city and the Commonwealth would be the gainers."

Interest in school gardens is increasing. Educators are beginning to appreciate the educational value of raising plants. The Educational League has published a leaflet on a German school garden. George Henry Knight of New York, wrote an article on the subject which came out in Pearson's Magazine last year; and he wrote me that he is going to publish another, and I have sent him some photographs to illustrate it. Dr. F. M. Powell, Superintendent of the Institution for Feeble-Minded Children in Glenwood, Iowa, is also writing a monograph on the subject, and I sent him four of the half-tone cuts that illustrated the report of our Committee last year. A number of women teachers, to my knowledge, are going to talk on the subject before clubs in Boston and vicinity. I had the pleasure of showing about sixty lantern slides of children at work in the school garden before the Boston Society of Natural History, December 18, 1901. In view of such indications as these there is no doubt that the subject is increasing in popular estimation.

CHILDREN'S HERBARIUMS.

Since there was considerable uncertainty as to whether the hall in this building would be ready for exhibition the Committee made less effort than usual to secure a large exhibit of herbariums; but they came just the same in unexpected numbers. Additional sat-

isfaction was found in the attendance of an unusual number of children, a fact that could not be accounted for at first thought. Then came the idea that the hall was situated in a residential district, and all was plain. This promises well, not only for herbarium exhibitions but for all other kinds of exhibitions.

The exhibitors came in families, so to speak, more than in any previous year. There were three Murdoch boys, three Morss boys, two Swain boys, two French girls and two Clapp girls. For years past it has been noticed that the family interest in herbarium work has been much greater than any school interest; and so slight has the latter been that the Committee have decided to give up that part of their work and turn their attention to the encouragement of family interests. There seem to be dead weights on the schools so far as anything besides books is concerned. There are two probable reasons for this condition. Teachers generally are not yet sufficiently acquainted with wild flowers to have enough interest in herbarium work to induce their pupils to make herbariums. The past ten years' experience shows that individual parents have much more interest and efficiency in bringing about results in herbarium work than teachers. Secondly, the requirements of the course of study, are so exacting as to leave neither place nor time for collecting, pressing and mounting plants. So the case seems to be a hopeless one for public school children.

The most notable collection was that sent in by Dorothea Metcalf. The beauty of the arrangement of the plants and the preservation of their colors were far beyond anything else in the hall. Her parents were found to be enthusiastic in the work. And this attitude of the parents has been found to be so uniform through years that the Committee have come to rely upon it as a permanent thing, and to base all their hopes upon it.

Olive French's collection of fifty grasses and Christine Dudley Clapp's collection of leaf sprays were easily the best of their kind on exhibition. The mothers of these girls are deeply interested in their work. Olive's brother, Arthur, who exhibited so many years, is a skillful botanist, although still in his teens. And the little Marion French is coming along the same line.

The opportunity thus presented to children by the Massachusetts

Horticultural Society is certainly a great one. The Committee hold it in higher and higher esteem as the years go on; and the children and their parents seem to be of the same mind.

The Committee have decided to make one radical change in their awards for herbariums: that is, to pay a definite sum for every specimen that comes up to the standard. This simplifies the work very much, and allows exhibitors to make additions many years without requiring the Committee to attempt the difficult task of determining a just award in view of all the plants that the exhibitor may have entered in previous years. Inducements for entering lichens and mosses have been made by offering a definite sum as indicated in the circular.

PRIZES AND GRATUITIES AWARDED FOR SCHOOL GARDENS AND CHILDREN'S HERBARIUMS.

SCHOOL GARDENS.

George Putnam School, Roxbury, first prize	$15 00
Gratuity:—	
High School, Bath, Me.	5 00

CHILDREN'S HERBARIUMS, NOVEMBER 30, 1901.

FLOWERING PLANTS.—For one hundred specimens:	
First prize, Dorothea Metcalf	$4 00
For twenty-five specimens:	
First prize, Donald N. Swain	1 50
Gratuities:—	
John Murdoch, Jr., eighty additions to four hundred and fifty	4 00
Joseph Murdoch, ninety-one additions to one hundred and sixty-seven	3 50
Richard Murdoch, ninety-four additions to one hundred and ten	3 00
Olive L. French, thirty-seven additions to two hundred and ninety-six	2 50
Marion L. French, seventy-six additions to sixty-six	2 00
Roscoe G. Knight, one hundred and three additions to one hundred and twenty	2 00
Edward L. Morss, seventy-five additions to fifty	2 00
Robert D. Morss, twenty-five additions to one hundred and fifty	1 25

Philip B. Morss, twenty-five additions to one hundred and twenty-five	1 00
Winthrop C. Swain, twenty-five additions to sixty	75
GRASSES.—For fifty specimens:	
First prize, Olive L. French	5 00
For ten specimens:	
First prize, Joseph Murdoch	1 00
Second, Richard Murdoch	75
Gratuity:—	
John Murdoch, Jr., eighteen additions to thirty	2 00
SEDGES.—For thirty specimens:	
First prize, Joseph Murdoch	3 00
For twenty specimens:	
First prize, Richard Murdoch	2 00
Gratuities:—	
John Murdoch, Jr., twenty-three additions to forty-five	3 00
Olive L. French, seven additions to forty	1 00
FERNS.—For thirty specimens:	
First prize, Dorothea Clapp	5 00
For fifteen specimens:	
Second prize, Robert D. Morss	2 50
For ten specimens:	
Second prize, Philip B. Morss	1 50
Gratuities:—	
Roscoe G. Knight, seven additions to fifteen	1 25
John Murdoch, Jr., five additions to fifteen	1 00
SPRAYS OF LEAVES OF NATIVE TREES AND SHRUBS.—Collection, not less than thirty sheets, so arranged as to show both surfaces:	
First prize, Christine Dudley Clapp	3 00
Second, Roscoe G. Knight	2 00
Third, John Murdoch, Jr.	1 00
Gratuity:—	
Winthrop C. Swain, twenty sheets	75
Total for Gardens and Herbariums	$83 25

The amount of money appropriated by the Society for the use of the Committee was:

For Prizes and Gratuities	$125 00		
For Current Expenses	75 00		
		$200 00	
Received from sales of paper		4 25	
			$204 25
Awarded for School Gardens		$20 00	
Awarded for Herbariums		63 25	
Paper		18 04	
Advertising		19 60	
Expressage, posters, stamping, etc.		13 00	
Postage, wrappers, etc.		1 50	
Total Expense			135 39
Balance unexpended			$68 86

HENRY L. CLAPP, *Chairman*, Roxbury,
MISS KATHARINE W. HUSTON, Roxbury,
WILLIAM P. RICH, Chelsea,
CHARLES W. JENKS, Bedford,
} *Committee on School Gardens and Children's Herbariums.*

MRS. H. L. T. WOLCOTT, Dedham,
HENRY S. ADAMS, Boston,
W. E. C. RICH, *Secretary*,
99 Moreland Street, Roxbury, Mass.
} *Committee on School Gardens and Children's Herbariums.*

REPORT

OF THE

COMMITTEE ON NATIVE PLANTS

FOR THE YEAR 1901.

By Charles W. Jenks.

At the meeting of the Society May 4th last, it was voted "that Charles W. Jenks be appointed to award the prizes offered for Native Plants with liberty to call in the aid of such experts as he may think proper." As there have been no general exhibitions this year, there has been no work for your committee to do.

It seems to me, if the Society wishes to continue these exhibitions, which in past years have been so attractive to many visitors, a committee of three or five members should be chosen, as it is difficult for any one member to be present every Saturday, especially during the vacation season.

While I must decline to serve longer as the only member, I would be pleased to serve as one of three or five, should the Society so desire.

REPORT

OF THE

Committee on Forestry and Roadside Improvement

FOR THE YEAR 1901.

By HARVEY N. SHEPARD, Chairman.

To the President and Members of the Massachusetts Horticultural Society:—

The Committee on Forestry and Roadside Improvement respectfully report:

The work referred to in our previous reports of keeping in touch with the tree wardens and others in the Commonwealth for the purpose of furthering the welfare of our roadside trees has been kept up more actively than ever, both in the collection of supplementary material and in the supplying of information and advice. The interest grows and the service rendered becomes more important. The classifying of the material also has gone forward steadily and as rapidly as possible, but cannot, we greatly regret, be completed in season for this report. In our judgment, the work should be kept up, and next year should see a valuable report upon it.

We have distributed this year about eight hundred copies of the Circulars from the Boston Society of Natural History relative to the Protection of Native Plants in connection with our own Circular, and about four hundred copies of the Circular of the American Park and Outdoor Art Association.

In co-operation with like committees from the Appalachian Mountain Club and the Massachusetts Forestry Association we

met the Commissioners of the Greylock Reservation, made a careful examination of its condition, and have submitted previously to the three associations our unanimous opinions relative thereto.

The work begun upon another branch of our duties, in an endeavor to ascertain the economic value of wood planting in the Commonwealth, continues, and we trust to be able next year to make a report relative thereto.

The pamphlet containing the laws of the Commonwealth relative to forests and trees has been widely distributed, and the many communications sent to us show that it was greatly needed and has been of much value.

HARVEY N. SHEPARD,
NATHANIEL S. SHALER,
J. WOODWARD MANNING,
JAMES STURGIS PRAY,
HENRY S. HUNNEWELL,
} *Committee on Forestry and Roadside Improvement.*

REPORT

OF THE

COMMITTEE OF ARRANGEMENTS

FOR THE YEAR 1901.

By JOSEPH H. WOODFORD, Chairman.

The past year has been one of unusual experience as far as our exhibitions have been concerned. Owing to the sale of our old Hall on Tremont Street, and our having to vacate the premises on the first day of May last, we were unable, after that date, to hold any exhibitions until we could occupy our new Hall in November. Consequently, the duties of your Committee have been much lighter than they would have been had the new Hall been completed earlier in the season.

It may not be polite or courteous to the Building Committee to criticise their work or the unfinished condition of the interior of the new building, but we cannot pass over the fact that not one member of the working committees of our Society was consulted as to the size of the halls, the convenience of access, the adaptability for exhibitions, or the accommodation of an audience visiting the exhibitions.

In our report for the year 1895 we pointed out the inadequacy of our then accommodations, and at that time intimated that we should "have a hall of easy access and of sufficient capacity to accommodate any and all of our exhibitions, and at the same time capacious enough to contain a large audience comfortably."

You see what we have got. The main hall in this building is not as large as the two halls in the old. There is no space convenient in the new building for the storage of tables, etc., when

out of use. The lights are too far away from the plants and flowers, and there is no accommodation for an audience.

To ameliorate these conditions, in part, we would recommend the digging out of the earth which was filled in, in the main hall, and covering the ground with a concrete floor; then extend a floor on the same level of the loggia over the whole space, thus bringing the exhibitions nearer the light, and, at the same time, affording sufficient storage accommodations for all furniture, etc., used in our exhibitions. Furthermore, we would recommend that three galleries be constructed, one on each side near the loggia, and one at the rear end of the hall, to accommodate the public, and when all this is done, to tint the walls some color which will not absorb light and destroy the color of flowers.

If these suggestions are carried out the alterations will in a great measure help the exhibitions and contribute to the comfort of an appreciative public.

The amount of money placed at the disposal of this Committee has only in part been expended, but that part judiciously and for the best interests of the Society. The receipts for admission to the two paying exhibitions, Spring and Chrysanthemum, show an increase over those of last year, which is extremely gratifying.

The Treasurer shows by his books receipts for the	
Spring Exhibition	$375 75
Chrysanthemum Exhibition	1,943 25
Making a total of	$2,319 00

which is in the Treasury of the Society.

Respectfully submitted,

JOSEPH H. WOODFORD,
ARTHUR H. FEWKES,
J. WOODWARD MANNING,
E. W. WOOD,
WARREN HOWARD HEUSTIS,
PATRICK NORTON,
ROBERT FARQUHAR,

Committee of Arrangements.

REPORT

TO THE

STATE BOARD OF AGRICULTURE

FOR THE YEAR 1901.

This year has been a very important one in the history of the Massachusetts Horticultural Society, as it marks the removal from their old building to their new building, corner of Massachusetts and Huntington Avenues.

On the first of May, 1901, the old hall was transferred to a syndicate and the work of tearing down was begun.

The old Horticultural Hall was dedicated in 1865.

The Society, with the exception of the Pennsylvania Horticultural Society, the first of its kind in this country, was organized March 17, 1829, fully incorporated in June of the same year with one hundred and forty members. The first exhibition of any size was the "Spring Exhibition," held March 19th, at which many flowers and plants were shown.

The new building was opened to the public June 4th, 1901 with the most notable and beautiful display of flowers ever seen in Boston. It was pronounced by experts to be the finest show ever given in the country. It was truly a floral triumph, there being a remarkable display of orchids, azaleas and other plants. Credit for the arrangement of the exhibition is due to Prof. C. S. Sargent, assisted by Miss Beatrix Jones.

A departure was made at this exhibition by having the building open on Sunday; thousands took advantage of the opportunity thus offered.

Weekly summer exhibits of fruits and flowers were omitted this year.

September 21st a meeting was held, and the building formally accepted by the Society.

In November the first real exhibition of the Society for prizes was held in the new building, the show in June being an opening exhibition of the building and not for premiums. This show, with the combination of Annual Chrysanthemum, Fruit, Plant, Flower and Vegetable Shows, offered opportunity for exhibitors from every department of horticulture, with a premium list of $3,000.

It was a very beautiful display, but I would suggest that the arrangement of flowers be left to one person, not to each exhibitor. In this manner combinations of color would be made more pleasing to the eye.

Respectfully submitted,

N. I. Bowditch,

Inspector.

REPORT

OF THE

Committee on Lectures and Publication

FOR THE YEAR 1901.

The Committee on Lectures and Publication submit the following report: We have had the following lectures delivered the past year, commencing January 12 and closing the course March 30:

January 12. Hardy Evergreen Trees and Shrubs and their Uses. By J. Woodward Manning, Reading.

January 19. The Trees of our Neighborhood. By Miss Emma G. Cummings, Brookline.

January 26. A Visit to Kew Gardens and Hampton Court. By Benjamin P. Ware, Marblehead.

February 9. Growing and Exhibiting Vegetables and Fruits. By Herbert R. Kinney, Worcester.

February 16. The Advancement of Market Gardening in the past Twenty-five Years. By Michael Sullivan, Revere.

February 23. A Quarter-Century's Evolution in American Horticulture. By Patrick O'Mara, New York, N. Y.

March 9. Fruit Culture in New England and its Development the Last Fifty Years. By Hon. Aaron Low, Hingham.

March 16. Parasitic Fungi. By Professor George F. Atkinson, Cornell University, Ithaca, N. Y. This lecture was delivered on the John Lewis Russell foundation.

March 23. Twenty Years of Peach Growing in Massachusetts. By John W. Clark, North Hadley.

March 30. Insects Injurious to Fruits and Vegetables. By Professor H. T. Fernald, Amherst.

As in former years, abstracts made from advance copies of the lectures have been printed in the *Evening Transcript* of the day when the lecture was delivered, and extra copies of these abstracts have been placed on the table on the next Saturday, and have been freely distributed and eagerly sought after. It is believed that no course of lectures has been listened to more attentively, or by larger audiences.

The Schedule of Prizes was, as hoped and anticipated, ready at the beginning of the year or a few days before, but the work on the TRANSACTIONS has been greatly hindered by the two removals of the Library and other property of the Society, which unavoidably consumed much of the time of the Secretary and Librarian and his assistants. And even now that we are comparatively settled, our distance from the business portion of the city is found a serious obstacle to the speedy printing of the Society's publications. Part II of 1900 has been printed and distributed during the year, and Part I for 1901 is nearly all in type.

Respectfully submitted,

AARON LOW,
JAMES H. BOWDITCH,
E. W. WOOD,
Committee.

REPORT

OF THE

COMMITTEE ON THE LIBRARY

FOR THE YEAR 1901.

By WM. E. ENDICOTT, CHAIRMAN.

The number of books purchased this year has been much smaller than in many other years for the obvious reason that from April to October the library had no permanent quarters. A larger part of our appropriation than usual has been devoted to binding, very much of which has been done.

Our books have been moved twice during the year; in April from our old hall to the Tremont Building, and six months later to the present library room. These transfers were admirably planned and carried out, we believe, as well as could be done, but it was not possible to prevent damage entirely.

Of the present library room it is not necessary to say much, it speaks for itself; the Library Committee has had absolutely nothing to do with planning or furnishing it. It seems to us that much harm will come to the books unless glass doors be fitted to the cases, and it is obvious that the shelves, all of which are eight inches deep, are not adapted to take books fourteen inches wide; but these things, we hope, may soon be remedied.

At a recent meeting, the Society voted that any further furnishing of the library room should be entrusted to the Library Committee, and we shall give our earnest attention and endeavors to make good such defects as may be found to exist.

WM. E. ENDICOTT,
GEORGE W. HUMPHREY,
WALTER S. PARKER,
GEORGE E. DAVENPORT,
CHARLES W. SWAN,
Library Committee.

The New Library.

REPORT

OF THE

SECRETARY AND LIBRARIAN

FOR THE YEAR 1901.

For many years the difficulty of avoiding in these reports from year to year an appearance of sameness has been remarked on, but this year the completion of the Society's new building and the removal to it of the library and all other departments of the Society's work, has made a break in that sameness which has not occurred before for thirty-five years, and is not likely to occur again for many more. Owing to the failure of the contractor to complete the new building by the time when our lease of the old one expired, it seemed expedient to hire temporary rooms for the deposit of the library, and a convenient suite of rooms in the Tremont Building, comprising, besides quiet and pleasant rooms for the accommodation of the library, a room for the meetings of the Society and Committees, were procured, these rooms being all fireproof. To them the books and bookcases were conveyed, and the former placed in the latter, so that they could be as well consulted as in the old room. Though this course involved two removals, instead of the one which we had hoped would be sufficient, it was undoubtedly better for the welfare of the books as well as for their usefulness, than if they had been stored in bulk in a storage warehouse. I regret, however, that it was not better understood among the members of the Society, that the books were as accessible for home use or consultation by them as they ever had been.

Both removals and rearrangements were affected in a skilful and expeditious manner under the immediate direction of Miss C. M. Endicott, who deserves much credit therefor. So far as is now known this was done without the loss of a single book, and so

careful were the teamster and his assistants employed to convey them from place to place, that not one of the two hundred panes of glass (mostly large ones) in the bookcases was broken.

The want of increased accommodations as a serious obstacle to ready reference to many books was first brought to the attention of the Society by the Library Committee in their report in 1875. The bookcases added since have afforded a relief, which though indispensable, has never been sufficient to afford proper accommodation to the books, and it is a great satisfaction to feel that after the lapse of twenty-five years we have shelf room of such extent as not only to show the back of every book but to afford room for the additions of future years. But it is a great drawback to this satisfaction to be obliged to say that the shelves, with which the library was fitted by the Building Committee, were found so narrow that more than two thousand volumes are too large to be supported by them.

Not so many books have been purchased as in some previous years, but among those worthy of special mention are Rouy's Illustrationes Plantarum Europæ Rariorum, thus far comprising fifteen fascicles, with three hundred and seventy-five plates; thirteen volumes of Morot's Journal de Botanique; Saccardo's La Botanica in Italia; Theophrastus, de Historia Plantarum (the best edition); Torrey, Eddy and Knevels's Catalogue of Plants within thirty miles of the City of New York, Albany, 1819; Clute's Our Ferns in their Haunts; Gardens, Old and New; Miss Jekyll's Wall and Water Gardens; Mrs. Earle's Old Time Gardens; the Pomologie de la France, in eight volumes, with beautifully colored plates; Bailey's Principles of Vegetable Gardening; and Marshall's Mushroom Book. Fascicles 123-125 of Martius's Flora Brasiliensis; Vol. 3 of Bailey's Cyclopedia of American Horticulture; and the continuation of may other serial works have been received.

When the work of removal was begun, it was necessary to pursue it as far as possible to the exclusion of all other work, and consequently as much progress has not been made on the publications of the Society as I could have wished. The Schedule of Prizes of 1901 was as usual ready on the first of January, and we trust that that for 1902 will be equally prompt, but it must be understood that the distance of our location from any printing

office is a serious obstacle to prompt despatch of such work. Part II of our Transactions for 1900 was issued early in the year, and Part I for 1901 is nearly all in type.

If I may return to the subject of the library, I would close this Report with the words with which Mr. Parkman, then Chairman of the Library Committee, closed his first report after the occupation of the Tremont Street Hall — "Our library may be said to bear to this noble building the relation which the brain bears to the body, and the Society is aware of the importance to its interests of replenishing and invigorating this vital part."

ROBERT MANNING,

Secretary and Librarian.

CORRECTION.

In Part I, 1901, of the Transactions, the names of two of the plates — *Tsuga Sieboldii* and *Thuya occidentalis* var. *aurea* — should be transposed.

TREASURER'S REPORT.

FOR THE YEAR 1901.

MASSACHUSETTS HORTICULTURAL SOCIETY, *in account current with* CHARLES E. RICHARDSON, *December 31st, 1901.*

DR.

To amount paid on New Building			$197,913 28
" " " for Furniture and Exhibition Ware			449 65
" " " on account of Library	$416 66		
" " " from income of John S. Farlow fund	161 95		
" " " from income of J. D. Williams French fund	182 30		
			760 91
" " " Interest on funds for Prizes, credited opposite			2,026 06
" " " for Heating	$1,008 15		
" " " " Lighting	319 69		
" " " " Water rates	109 23		
" " " " Labor	2,098 50		
" " " " Stationery, Printing and Postage	1,905 36		
" " " " Incidentals	1,532 89		
" " " " Repairs	43 98		
" " " " " to Furniture, etc.	302 00		
" " " " Committee of Arrangements	175 30		
" " " " " on School Gardens and Children's Herbariums	50 64		
" " " " Lectures and Publications	255 00		
" " " " Committee on Forestry and Roadside Improvement	147 64		
" " " " Salaries of Treasurer, Secretary and Assistants	4,300 00		
" " " " Salaries of Committees	897 00		
" " " " Tax on So. Boston Property	140 06		
Amounts carried forward		$13,285 44	$201,149 90

Amounts brought forward	$13,285 44	$201,149 90
To amount paid for Abating nuisance on So. Boston Property . .	55 48	
" " " " Electric Power . . .	37 53	
" " " " Rent of Building, 101 Tremont Street . . .	10,000 00	
" " " " Rent of Rooms in Tremont Building and Chickering Hall	1,858 31	
" " " " Legal Services . . .	58 70	
" " " " Storage	202 50	
		25,497 96
" " " " Prizes awarded in 1900, paid in 1901, viz.:		
H. H. Hunnewell Prizes for Rhododendrons	105 00	
Prizes for Plants	1,839 88	
" " Flowers	2,237 32	
" " Fruit	1,586 00	
" " Vegetables	1,181 50	
" " Gardens and Greenhouses .	451 80	
" " Native Plants	160 20	
" " School Gardens and Children's Herbariums	100 00	
		$7,661 70
		$234,309 56
Balance of Cash December 31st, 1901 . . .		26,481 72
		$260,791 28

Cr.

By Balance of account rendered December 31st, 1900 . .			$74,864 73
" Building in 1901: —			
Rent of Halls . . .	$1,230 34		
" " Stores . . .	2,255 50		
		$3,485 84	
" Annual Exhibitions, Gross . .	2,319 00		
Less Expenses . . .	946 11		
		1,372 89	
" Admissions and Assessments . . .		1,246 00	
" Mt. Auburn Cemetery		4,641 00	
" State Bounty		600 00	
Amounts carried forward . . .		$11,345 73	$74,864 73

Amounts brought forward		$11,345 73	$74,864 73
By Interest on Bonds	$10,195 00		
" " " Loan	3,231 53		
" " " Bank Balances	720 80		
		14,147 33	
" Insurance		113 66	
" J. D. Williams French		5,000 00	
" Francis Brown Hayes Bequest		23,293 77	
" Loan on Call		130,000 00	
" Interest credited following Funds charged opposite:			
Samuel Appleton Fund	$50 00		
John A. Lowell "	50 00		
Theodore Lyman "	550 00		
Josiah Bradlee "	50 00		
Benjamin V. French "	25 00		
W. J. Walker "	117 72		
Levi Whitcomb "	25 00		
Benjamin B. Davis "	25 00		
Marshall P. Wilder "	50 00		
John Lewis Russell "	50 00		
H. H. Hunnewell "	200 00		
Francis Brown Hayes "	500 00		
Henry A. Gane "	50 00		
John S. Farlow "	100 00		
J. D. Williams French "	183 34		
		2,026 06	
			185,926 55
			$260,791 28

CHARLES E. RICHARDSON,
Treasurer.

Approved:

WALTER HUNNEWELL, } *Finance*
O. B. HADWEN, } *Committee.*

AUDITOR'S CERTIFICATE.

28 State Street, Boston, February 18th, 1902.

Messrs. Walter Hunnewell,
Arthur F. Estabrook,
O. B. Hadwen,

Finance Committee of the
Massachusetts Horticultural Society.

Gentlemen:—In compliance with your request, I made a thorough audit of the books and general accounting affairs of the Massachusetts Horticultural Society for the year which ended with the 31st day of December, 1901, and herewith submit to you my report of the same.

Report.

I added the ledger, journal and cash book and the small books tributary to the cash book and saw that all balances were correctly carried forward. I examined and checked the vouchers representing the disbursements during the year and found the amount of cash required by the cash book upon the first day of January, 1902, to have been on hand, and also examined the securities of the Society in the custody of the Treasurer and found that they were in all instances in accordance with the requirements of the record. I traced all postings from the journal and cash book into the ledger and proved the correctness of the balance sheet taken from the ledger as of the 31st day of December, 1901, which is a true statement of the financial condition of the Society upon said date, to the best of my knowledge and belief.

In short, I satisfied myself that the work in connection with the accounting affairs of the Society was being conscientiously and honestly performed, and that there was every evidence of faithfulness upon the part of the Treasurer.

Yours very respectfully,

Andrew Stewart,
Examiner of Accounts.

ASSETS AND LIABILITIES OF THE MASSACHUSETTS HORTICULTURAL SOCIETY.

DECEMBER 31, 1901.

ASSETS.

Real Estate		$515,997 36
Furniture and Exhibition Ware		8,157 15
Library		40,573 38
Stereotype plates and copies of History		246 50
Sinking Fund		23,872 50
Chicago, Burlington & Quincy R. R. Bonds		1,000 00
Kansas City, Clinton & Springfield " "		1,980 00
Lake Shore & Michigan Southern " "		10,415 25
Atchison, Topeka & Santa Fé " "		44,693 25
Chicago, Burlington & Quincy, "Nebraska Extension" R. R. Bonds		50,012 50
Chicago & West Michigan R. R. Bonds		9,987 50
Kansas, Fort Scott & Memphis R. R. Bonds		27,523 75
Chicago, Burlington & Quincy, Illinois Division R. R. Bonds		51,625 00
City of Newton Bonds		24,228 75
W. A. Hayes and A. P. Loring, Trustees		3,488 76
Cash		26,481 72
		$840,283 37

LIABILITIES.

Prize Funds invested in Bonds:			
Samuel Appleton Fund,	$1,000 00		
John A. Lowell "	1,000 00		
Theodore Lyman "	11,000 00		
Josiah Bradlee "	1,000 00		
Benjamin V. French "	500 00		
H. H. Hunnewell "	4,000 00		
W. J. Walker "	2,354 43		
Levi Whitcomb "	500 00		
Benjamin B. Davis "	500 00		
Marshall P. Wilder "	1,000 00		
J. Lewis Russell "	1,000 00		
Francis Brown Hayes "	10,000 00		
Henry A. Gane "	1,000 00		
John S. Farlow "	2,500 00		
J. D. Williams French "	5,000 00		
		$42,354 43	
Prizes for 1901 payable in 1902		8,200 00	
			$50,554 43
Surplus			789,728 94
			$840,283 37

CHARLES E. RICHARDSON,
Treasurer.

Membership Account of the Massachusetts Horticultural Society, December 31st, 1901.

Life Membership per last report		682	
Added in 1901		23	
Commuted from Annual		7	
		712	
Deceased		26	
			686
Annual Membership per last report		199	
Added in 1901		7	
		206	
Commuted to Life		7	
Deceased		5	
Resigned		3	
Dropped for non-payment for two years		7	
		22	
			184
Present Membership			870

INCOME FROM MEMBERSHIP.

23 new Life Members @ $30	$690 00
7 Commuted to Life @ $20	140 00
7 new Annual Members @ $10	70 00
Assessments	346 00
	$1,246 00

CHARLES E. RICHARDSON,
Treasurer.

Dr. *Massachusetts Horticultural Society in account with the Proprietors of the Cemetery of Mount Auburn.* **Cr.**

For Sales and Improvements within the Cemetery for the year ending December 31st, 1901.

To cost of filling up and improving land at Mount Auburn for the year ending December 31st, 1901. The Massachusetts Horticultural Society being charged with their proportion of same:			By Sales in January		$1,115 00
			" " " February		600 00
			" " " March		40 00
			" " " April		1,462 50
			" " " May		4,689 50
			" " " June		3,423 20
			" " " July		732 00
			" " " August		1,151 00
			" " " September		1,610 00
			" " " October		2,995 00
			" " " November		1,480 00
			" " " December		70 00
					$19,368 20
Rear of Walnut Avenue and Fern Path	$380 78		Net amount received from Receiving Tomb		1,193 00
					$20,561 20
Magnolia Avenue	3 15		Less graves repurchased		40 00
					$20,521 20
Between Cherry and Birch Avenues	150 38		Deduct for Annual Expense		1,400 00
					$19,121 20
Glen Avenue	22 88		One-fourth of $19,121.20		$4,780 30
	$557 19				
One-fourth part of $557.19	$139 30				
Balance due Mass. Horticultural Society,	4,641 00				
		$4,780 30			

E. & O. E.

JOHN L. DILL, *Treasurer.*

Boston, December 31, 1901.

THE MASSACHUSETTS HORTICULTURAL SOCIETY

To the PROPRIETORS OF THE CEMETERY OF MOUNT AUBURN. *Dr.*

To cost of filling up and improving land at Mount Auburn for the year ending Dec. 31st, 1901. The Massachusetts Horticultural Society being charged with their proportionate part.

Rear of Walnut Avenue and Fern Path.

130.4 days, man	$293 40	
23.3 days, man and horse	87 38	
		$380 78

Magnolia Avenue.

1.4 days, man	$3 15	3 15

Between Cherry and Birch Avenues.

40.1 days, man and horse	150 38	150 38

Glen Avenue.

6.1 days, man and horse	22 88	22 88
		$557 19
One-fourth of $557.19		$139 30

JAMES C. SCORGIE,
Supt. of the Cemetery of Mount Auburn.

MOUNT AUBURN, December 31, 1901.

I certify the above to be a true copy of improvements for the year 1901 as rendered by the Superintendent.

JOHN L. DILL,
Treasurer.

Massachusetts Horticultural Society.

OFFICERS AND STANDING COMMITTEES FOR 1902.

President.

O. B. HADWEN, of Worcester.

Vice-Presidents.

BENJAMIN P. WARE, of Clifton.

SAMUEL HOAR, of Concord.

JOSEPH R. LEESON, of Newton Centre.

OAKES AMES, of North Easton.

Treasurer and Superintendent of the Building.

CHARLES E. RICHARDSON, of Brookline.

Secretary and Librarian.

ROBERT MANNING, of Salem.*

Professor of Botany and Vegetable Physiology.

BENJAMIN M. WATSON, of Jamaica Plain.

Professor of Entomology.

SAMUEL H. SCUDDER, of Cambridge.

Delegate to the State Board of Agriculture.

WILLIAM H. SPOONER, of Jamaica Plain.

* Communications to the Secretary, on the business of the Society, should be addressed to him at Horticultural Hall, Boston.

STANDING COMMITTEES.

Executive.

THE PRESIDENT, O. B. HADWEN, CHAIRMAN.

THE CHAIRMAN OF THE FINANCE COMMITTEE, WALTER HUNNEWELL, *Ex officio.*

WILLIAM C. STRONG.
WILLIAM H. SPOONER.
NATHANIEL T. KIDDER.
FRANCIS H. APPLETON.
BENJAMIN C. CLARK.
CHARLES W. PARKER.
CHARLES E. CURTIS.

Finance.

WALTER HUNNEWELL, OF BOSTON, CHAIRMAN.

O. B. HADWEN.
ARTHUR F. ESTABROOK.

Lectures and Publication.

AARON LOW, OF HINGHAM, CHAIRMAN.

JAMES H. BOWDITCH.
E. W. WOOD.

Library.

WILLIAM E. ENDICOTT, OF CANTON, CHAIRMAN.

GEORGE W. HUMPHREY.
WALTER S. PARKER.
GEORGE E. DAVENPORT.
CHARLES W. SWAN.

Plants.

ARTHUR H. FEWKES, OF NEWTON HIGHLANDS, CHAIRMAN.

JAMES WHEELER.
WILLIAM J. MARTIN.
ROBERT CAMERON.
ROBERT MELROSE GREY.

Flowers.

J. WOODWARD MANNING, OF READING, CHAIRMAN.

MICHAEL H. NORTON.
KENNETH FINLAYSON.
FREDERICK S. DAVIS.
JAMES COMLEY.

Fruits.

E. W. WOOD, OF WEST NEWTON, CHAIRMAN.

CHARLES F. CURTIS.
WARREN FENNO.
J. WILLARD HILL.
GEORGE F. PIERCE.
JOHN L. BIRD.
FREDERICK W. DAMON.

Vegetables.

WARREN H. HEUSTIS, OF BELMONT, CHAIRMAN.

VARNUM FROST.
WALTER RUSSELL.
AARON LOW.
GEORGE D. MOORE.
JOSHUA C. STONE.
MICHAEL SULLIVAN.

Forestry and Roadside Improvement.

HARVEY N. SHEPARD, Chairman.

NATHANIEL S. SHALER. HENRY S. HUNNEWELL.
J. WOODWARD MANNING. JAMES STURGIS PRAY, Secretary.

Gardens.

PATRICK NORTON, of Dorhester, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND ARRANGEMENTS, *Ex officiis.*

HENRY W. WILSON. JACKSON T. DAWSON.

For Establishing Prizes.

WILLIAM H. ELLIOTT, of Brighton, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

WILLIAM J. MARTIN.

Committee of Arrangements.

JOSEPH H. WOODFORD, of Boston, Chairman.

CHAIRMEN OF THE COMMITTEES ON PLANTS, FLOWERS, FRUITS, VEGETABLES, AND GARDENS, *Ex officiis.*

ROBERT FARQUHAR.

MEMBERS FOR LIFE.

Members of the Society and all other persons who may know of deaths, changes in residence, or other circumstances showing that the following list is incorrect in any particular, will confer a favor by promptly communicating to the Secretary any needed corrections.

Information, or any clew to it, is especially desired in regard to members whose names are marked thus.†

Adams, Mrs. Charles Francis, South Lincoln.
Adams, Henry Saxton, Boston.
Alger, Rev. R. F., Dorchester.
Allen, Hon. Charles H., Lowell.
Allen, Thomas, Boston.
Ames, F. Lothrop, North Easton.
Ames, Mrs. F. L., North Easton.
Ames, George, Boston.
Ames, John S., North Easton.
Ames, Miss Mary S., North Easton.
Ames, Oakes, North Easton.
Ames, Oliver, North Easton.
Ames, Mrs. Oliver, Sr., North Easton.
Ames, Preston Adams, Boston.
Ames, Miss Susan E., North Easton.
Amory, C. W., Boston.
Amory, Frederick, Boston.
Anderson, Larz, Brookline.
Andrews, Charles L., Milton.
Andrews, Frank W., Washington, D. C.
Andros, Milton, San Francisco, Cal.
Appleton, Francis H., Boston.
Appleton, William S., Boston.
Arnold, Mrs. George Francis, Brookline.
Ash, John, Pomfret Centre, Conn.
Asmus, Ernst G., West Hoboken, N. J.
Atkins, Edwin F., Belmont.
Ayer, James B., Boston.

Bailey, Jason S., West Roxbury.
Baker, James E., South Lincoln.
Ball, George H., Boston.
Banfield, Francis L., M.D., Worcester.
Barber, J. Wesley, Newton.
Barnard, James M., Boston.
Barnard, Robert M., Everett.
Barnes, Walter S., Somerville.
† Barney, Levi C., Boston.
Barry, John Marshall, Boston.
Barry, William C., Rochester, N. Y.
Bartlett, Edmund, Newburyport.
Bartlett, Francis, Beverly.
Bartlett, Miss Mary F., Boston.
Bates, Miss Mary D., Ipswich.
Baylies, Walter C., Taunton.
Beal, Leander, Swampscott.
Becker, Frederick C., Cambridge.
Beckford, Daniel R., Jr., Dedham.
Beebe, E. Pierson, Boston.
Beebe, Franklin H., Boston.
Beebe, J. Arthur, Boston.
Bigelow, Albert S., Cohasset.
Bigelow, Joseph S., Cohasset.
Bigelow, Dr. William Sturgis, Boston.
Black, George N., Manchester.

Blake, Miss Anne, Brookline.
Blake, Mrs. Arthur W., Brookline.
Blake, Edward D., Boston.
Blake, Francis, Weston.
Blake, Frederick A., Rochdale.
Blakemore, John E., Roslindale.
Blanchard, John W., West Newton.
Blinn, Richard D., Chicago, Ill.
Bliss, William, Boston.
Boardman, Samuel M., Hyde Park.
Boardman, T. Dennie, Manchester.
Bôcher, Prof. Ferdinand, Cambridge.
Bockus, Charles E., Dorchester.
Bosler, Frank C., Carlisle, Penn.
Bowditch, Charles P., Jamaica Plain.
Bowditch, Ernest W., Milton.
Bowditch, James H., Brookline.
Bowditch, Nathaniel I., Framingham.
Bowditch, William E., Roxbury.
Bowker, William H., Boston.
Brackett, Cephas H., Newton.
Breck, Joseph Francis, Allston.
Bremer, Mrs. John L., Manchester.
Bresee, Albert, Hubbardton, Vt.
Brewer, Francis W., Hingham.
Briggs, William S., Lincoln.
Brigham, William T., Honolulu, Hawaii.
Brooks, Henry, Lincoln.
Brooks, J. Henry, Milton.
Brooks, Lawrence, Groton.
Brooks, Peter C., Boston.
Brooks, Shepherd, Boston.
Brown, Alfred S., Jamaica Plain.
Brown, Edward J., Weston.
Brown, George Barnard, Brookline.
Brown, John M., Belmont.
Brown, Samuel N., Boston.
Burlen, William H., Boston.
Burnett, Harry, Southborough.
Burnham, John A., Manchester.
Burnham, Lamont G., Essex.
Burr, Matthew H., Hingham.
Buswell, Frank E., Brooklyn, N. Y.
Butler, Aaron, Wakefield.
Butler, Edward K., Jamaica Plain.
Cabot, Dr. Arthur T., Boston.
†Cadness, John, Flushing, N. Y.
Cains, William, South Boston.
Calder, Augustus P., Boston.
Cameron, Robert, Cambridge.
Campbell, Francis, Cambridge.
Capen, John, Boston.
Carlton, Samuel A., Boston.
Carr, Hon. John, Roxbury.
Carter, Charles N., Boston.
Carter, Miss Maria E., Woburn.
Cartwright, George, Dedham.
Casas, W. B. de las, Malden.
Chadbourne, Marshall W., East Watertown.
Chaffin, John C., Newton.
Chamberlain, Chauncy W., Brookline.
†Chase, Andrew J., Lynn.
Chase, Daniel E., Somerville.
Chase, George B., Dedham.
Chase, William M., Dorchester.
Cheney, Amos P., Natick.
Cheney, Mrs. Elizabeth S., Wellesley.
Childs, Nathaniel R., Boston.
Choate, Charles F., Southborough.
Christie, William, Chelsea.
Claflin, Hon. William, Newtonville.
Clapp, Edward B., Dorchester.
Clapp, James H., Dorchester.
Clapp, William C., Dorchester.
Clark, Benjamin C., Boston.
Clark, B. Preston, Cohasset.
Clark, Miss Eleanor J., Pomfret Centre, Conn.
Clark, J. Warren, Rockville.
Clarke, Miss Cora H., Boston.
Clarke, Eliot C., Boston.
Cleary, Lawrence, Roxbury.
Clough, Micajah Pratt, Lynn.
Cobb, John C., Milton.
Coburn, Isaac E., Everett.
Codman, James M., Brookline.
Codman, Ogden, South Lincoln.
Coe, Miss Mary Alma, Boston.

Coffin, Abraham B., Winchester.
Cole, Edward E., Boston.
Collamore, Miss Helen, Boston.
Colton, Samuel H., Worcester.
Converse, Elisha S., Malden.
Converse, Col. H. E., Malden.
Coolidge, Joshua, Mount Auburn.
Coolidge, J. Randolph, Chestnut Hill.
Coolidge, Mrs. J. Randolph, Chestnut Hill.
Coolidge, T. Jefferson, Jr., Boston.
Cottle, Henry C., Boston.
Cox, Thomas A., Dorchester.
Coy, Samuel I., Boston.
Craig, William Nicol, North Easton.
Crane, Zenas, Dalton.
Crawford, Dr. Sarah M., Roxbury.
Crocker, Hon. George G., Boston.
Crocker, Miss S. H., Boston.
Crosby, George E., West Medford.
Cross, Alfred Richard, Nantasket.
Crowell, Randall H., Watertown.
Curtis, Charles F., Jamaica Plain.
Curtis, Charles P., Swampscott.
Curtis, Charles P , Jr., Boston.
Cushing, Livingston, Weston.
Cushing, Robert M., Boston.
Cutting, Gen. Walter, Pittsfield.

† Daggett, Henry C., Boston.
Dalton, Charles H., Beverly.
Daly, John C., Roxbury.
Damon, Frederick W., Arlington.
Dana, Charles B., Wellesley.
Daniels, Dr. Edwin A., Boston.
Davenport, Albert M., East Watertown.
Davenport, George E., Medford.
Davis, Edward L., Worcester.
Davis, John, Lowell.
Davis, L. Shannon, Brookline.
Dawson, Jackson T., Jamaica Plain.
Dee, Thomas W., Cambridge.
Denny, Clarence H., Boston.
Denton, Eben, Dorchester.
Dexter, F. Gordon, Boston.
Dexter, George, Beverly.
Dike, Charles C., Stoneham.
Doliber, Thomas, Brookline.
Donald, William, West Roxbury.
Donaldson, James, Roxbury.
Dorr, George, Dorchester.
Dove, George W. W., Andover.
Dowse, William B. H., West Newton.
Draper, Hon. Eben S., Hopedale.
Draper, George A., Hopedale.
Dreer, William F., Philadelphia, Pa.
Dumaresq, Herbert, Chestnut Hill.
Duncan, James L., Chelsea.
Dunlap, James H., Nashua, N. H.
Durant, William, Boston.
Durfee, George B., Fall River.
Dutcher, Frank J., Hopedale.
Dwight, Theodore F., Kendal Green.

Eaton, Horace, Cambridge.
Edgar, William W., Waverly.
Eldredge, H. Fisher, Boston.
† Eldridge, E. H., Roxbury.
Elliot, Mrs. John W., Boston.
Elliott, William H., Brighton.
Endicott, William, Boston.
Endicott, William, Jr., Boston.
Endicott, William C., Jr., Danvers.
Endicott, William E., Canton.
Estabrook, Arthur F , Boston.
Ewell, Warren, Dorchester.

Fairchild, Charles, Boston.
Falconer, William, Pittsburgh, Pa.
Farlow, Lewis H., Newton.
Farnsworth, Mrs. William, Dedham.
Farquhar, James F. M., Roslindale.
Farquhar, John K. M. L., Roxbury.
Farquhar, Robert, North Cambridge.
Faxon, John, Quincy.
Fay, H. H., Wood's Holl.
Fay, Joseph S., Jr., Wood's Holl.
Fenno, L. Carteret, Boston.
Fessenden, George B., Allston.
Fewkes, Arthur H., Newton Highlands.

Finlayson, Kenneth, Brookline.
Fisher, Peter, Ellis.
Flagg, Augustus, Boston.
Fletcher, George V., Belmont.
Fletcher, J. Henry, Belmont.
Fletcher, John W., Chelsea.
Flint, David B., Boston.
Foster, Charles H. W., Brookline.
Foster, Francis C., Cambridge.
Fottler, John, Jr., Dorchester.
Fowle, George W., Jamaica Plain.
Fowle, William B., Auburndale.
French, Miss Caroline L. W. Boston.
French, S. Waldo, Jamaica Plain.
French, W. Clifford, Cambridge.
Frohock, Roscoe R., Malden.
Frost, Irving B., Belmont.
Frost, Varnum, Arlington.

Galloupe, Charles W., Swampscott.
Galvin, John, Boston.
Gardner, Mrs. Augustus P., Hamilton,
Gardner, George A., Boston.
Gardner, George P., Boston.
Gardner, John L., Boston.
Gardner, Mrs. John L., Brookline.
Gardner, William Amory, Groton.
Gaston, William A., Boston.
Gibbs, Wolcott, M.D., Newport, R.I.
Gill, George B., Medford.
Gillard, William, Dorchester.
Gilmore, E. W., North Easton.
Gilson, F. Howard, Wellesley Hills.
Glover, Joseph B., Boston.
Goddard, Joseph, Sharon.
Goodell, L. W., Dwight.
Gorham, James L., Jamaica Plain.
† Gould, Samuel, Boston.
Gowing, Mrs. Clara E., Kendal Green.
Gray, James, Wellesley.
Gray, Mrs. John C., Boston.
Gregory, Hon. James J. H., Marblehead.
Grew, Edward S., Boston.
Grey, Benjamin, Malden.

Hadwen, Obadiah B., Worcester.
Hale, James O., Byfield.
Hall, Edwin A., Cambridgeport.
Hall, George A., Chelsea.
Hall, Jackson E., Boston.
Hall, Osborn B., Malden.
Hall, William F., Brookline.
Halliday, William H., South Boston.
Hammond, Gardiner G, New London, Conn.
Hammond, George W., Boston.
† Harding, George W., Arlington.
Harding, Louis B., Chestnut Hill.
Hardy, F. D., Cambridgeport.
Harlow, James F., Quincy.
Harris, Charles, Cambridge.
Harris, Thaddeus William, A.M., Keene, N. H.
Hartshorn, Arthur E., Worcester.
Harwood, George Fred, Newton.
Haskell, Edwin B., Auburndale.
Hastings, Levi W., Brookline.
Hatch, Mrs. C. S., North Cambridge.
Hatch, Edward, Boston.
Haven, Franklin, Boston.
Hawken, Mrs. Thomas, Rockland, Me.
Hayward, George P., Roxbury.
† Hazeltine, Hazen, Boston.
Hemenway, Augustus, Canton.
Hemenway, Mrs. Augustus, Canton.
Henshaw, Joseph P. B., Boston.
Henshaw, Samuel, Cambridge.
Heurlin, Julius, South Braintree.
Hewett, Miss Mary C., Canton.
Hews, Albert H., North Cambridge.
Higginson, Francis L., Boston.
Hilbourn, A. J., Boston.
Hill, John, Stoneham.
Hittinger, Jacob, Mt. Auburn.
Hoar, Samuel, Concord.
Hodgkins, John E., Portsmouth, N.H.

Hoitt, Hon. Charles W., Nashua, N. H.
Hollingsworth, Amor L., Milton.
Hollingsworth, Z T., Boston.
Hollis, George W., Grantville.
Holmes, Edward J., Boston.
Holt, Gustavus C., Belmont.
Holt, Mrs. Stephen A., Cambridge.
Holt, William W., Winchester.
Hooper, William, Boston.
Horner, Mrs. Charlotte N.S., Georgetown.
Horsford, Miss Kate, Cambridge.
Hovey, Charles H., South Pasadena, Cal.
Hovey, Stillman S., Woburn.
Howard, Joseph W., Somerville.
Hubbard, Charles Wells, Weston.
Hubbard, James C., Everett.
Humphrey, George W., Dedham.
Hunnewell, Arthur, Wellesley.
Hunnewell, Henry Sargent, Wellesley.
Hunnewell, H. Hollis, Wellesley.
Hunnewell, Walter, Wellesley.
Hunt, Dudley F., Reading.
Hunt, Francis W., Melrose.
Hunt, Franklin, Charlestown, N. H.
Hunt, William H , Concord.

Jack, John George, Jamaica Plain.
Jackson, Charles L., Cambridge.
Jackson, Robert T., Boston.
James, George Abbot, Nahant.
Janvrin, William S., Revere.
Jeffries, William A., Boston.
Jenks, Charles W., Bedford.
Johnson, J. Frank, Malden.
Jones, Jerome, Brookline.
Jones, Dr. Mary E., Boston.
Jordan, Eben D., Boston.
Jordan, Henry G., Hingham.
Jose, Edwin H., Cambridgeport.

Kakas, Edward, West Medford.
Kellen, William V., Marion.
Kelley, George B., Jamaica Plain.
Kendall, D. S., Woodstock, Ont.
Kendall, Edward, Cambridgeport.
† Kendall, Joseph R., San Francisco, Cal.
Kendall, Dr. Walter G., Atlantic.
Kendrick, Mrs. H. P., Allston.
Kennedy, George G., M. D., Roxbury.
Kent, John, Chestnut Hill.
Keyes, John M., Concord.
Kidder, Charles A., Southborough.
Kidder, Nathaniel T., Milton.
† Kimball, A. P., Boston.
Kimball, David P., Boston.
King, D. Webster, Boston.
Kingman, Abner A , Brookline.
Kingman, C. D., Middleborough.
Kinney, H. R., Worcester.
Knapp, Walter H., Newtonville.

Lamb, Horatio A., Milton.
Lancaster, Charles B., Boston.
Lanier, Charles, Lenox.
Lawrence, Amory A., Boston.
Lawrence, Amos A., Boston.
Lawrence, James, Groton.
Lawrence, John, Groton.
Lawrence, Rt. Rev. William, Boston.
Learned, Charles A., Arlington.
Lee, Daniel D., Jamaica Plain.
Lee, Francis H., Salem.
Lee, George C., Newton.
Leeson, Hon. Joseph R., Newton Centre.
Lemme, Frederick, Charlestown.
Leuchars, Robert B., Dorchester.
Lincoln, George, Hingham.
Lincoln, Col. Solomon, Boston.
Little, James L., Brookline.
Little, John Mason, Swampscott.
Locke, Edwin F., West Medford.
Locke, Isaac H., Belmont.
Lockwood, Rhodes, Boston.
Lodge, Richard W., Boston.

Loftus, John P., Dorchester.
Loomis, Elihu G., Bedford.
Loring, Augustus P., Beverly.
Loring, Mrs. William Caleb, Beverly.
Lothrop, William S. H , Boston.
† Lowder, John, Watertown.
Lowell, Abbott Lawrence, Boston.
Luke, Otis H., Brookline.
Lumb, William, Boston.
Lunt, William W., Hingham.
Lyman, George H., Wareham.
Lyman, Mrs. Theodore, Brookline.

Mabbett, George, Plymouth.
Mackie, George, M. D., Attleboro.
† Mahoney, John, Boston.
Mallett, E. B., Jr., Freeport, Me.
Mann, James F., Ipswich.
Manning, Jacob W., Reading.
Manning, J. Woodward, Reading.
Manning, Mrs. Lydia B., Reading.
Manning, Robert, Salem.
Manning, Warren H., Brookline.
Marshall, Frederick F., Everett.
Marston, Howard, Boston.
Mason, Miss Ellen F., Boston.
Mason, Col. Frederick, Taunton.
Matthews, Nathan, Boston.
May, Frederick W. G., Boston.
McCarty, Timothy, Providence, R. I.
McWilliam, George, Whitinsville.
Melvin, James C., West Newton.
Merriam, Charles, Boston.
Merriam, Herbert, Weston.
Merrill, Hon. Moody, Roxbury.
Metivier, James, Cambridge.
Milmore, Mrs. Joseph, Washington, D. C.
Minot, Charles S., Milton.
Minton, James, Boston.
Mitton, Edward J., Brookline.
Mixter, George, Boston.
Monteith, David, Dedham.
Montgomery, Alexander, Natick.
Moore, George D., Arlington.
Moore, John H., Concord.
Morgan, George H., New York, N. Y.
Morse, John T., Jr., Boston.
Morse, Robert M., Jamaica Plain.
Moseley, Charles H., Dorchester.
Mudge, George A., Portsmouth, N. H.
Murdock, Albert L., Boston.
Murphy, William Bowen, Boston.
Murray, Peter, Fairhaven.
Mutch, John, Brookline.

Nevins, Mrs. David, Methuen.
Newman, John R., Winchester.
Newton, Rev. William W., Pittsfield.
Nickerson, Mrs. George A., Dedham.
Norton, Charles W., Allston.
Norton, Edward E., Boston.

Oakman, Hiram A., North Marshfield.
Olmsted, Frederick Law, Jr., Brookline.
Olmsted, John C., Brookline.
Orpet, Edward O., South Lancaster.

Page, Mrs. Henrietta, Boston.
Paige, Clifton H., Mattapan.
Parker, Charles W., Boston.
Parkman, Henry, Boston.
Parsons, John E., Lenox.
Partridge, Horace, North Cambridge.
Patten, Marcellus A., Tewksbury.
Paul, Alfred W., Dighton.
Peabody, Francis H., Boston.
Peabody, George A., Danvers.
Peabody, John E., Salem.
Peabody, S. Endicott, Salem.
Peck, O. H., Denver, Col.
Peck, William G , Arlington.
Peirce, Miss Marion W., Topsfield.
† Perry, George W., Malden.
Pfaff, Col. Charles, South Framingham.
Philbrick, William D., Newton Centre.
Phillips, John C., North Beverly.
Phillips, Mrs. John C., North Beverly.

Phillips, William, North Beverly.
Pierce, Dean, Brookline.
Pierce, Elisha N., Waltham.
Pierce, George Francis, Neponset.
Pond, Preston, Winchester.
Poor, John R., Brookline.
Pope, Col. Albert A., Cohasset.
Porter, Alexander S., Boston.
Porter, James C., Wollaston.
Porter, Hon. Joseph S., Washington, D. C.
Prang, Louis, Boston.
Pratt, Laban, Dorchester.
Pratt, Lucius G., West Newton.
Pratt, Robert M., Boston.
Prendergast, J. M., Boston.
Prescott, Eben C., New York, N. Y.
Pringle, Cyrus G., Charlotte, Vt.
Proctor, T. E., Boston.
Prouty, Gardner, Littleton.
Putnam, George, Manchester.
Putnam, George J., Brookline.
Putnam, Joshua H., Newton Centre.

Quinby, Hosea M., M.D., Worcester.

Raddin, Everett W., North Cambridge.
Rand, Harry S., North Cambridge.
Rand, Oliver J., Cambridgeport.
Rawson, Warren W., Arlington.
Ray, James F., Franklin.
Raymond, Walter, Boston.
Read, Charles A., Manchester.
Reardon, John B., Boston.
Reed, Henry R., Jamaica Plain.
Rice, George C., Worcester.
Richards, John J., Boston.
Richardson, Charles E., Brookline.
Richardson, Dr. William L., Boston.
Rinn, J. Ph., Boston.
Ripley, Charles, Dorchester.
Ripley, Ebed L., Hingham Centre.
Robbins, I. Gilbert, Melrose Highlands.
Robinson, John, Salem.
Robinson Joseph B , Dorchester.
Robinson, Warren J., Somerville.
Rogers, Mrs. Jacob C., Peabody.
Roland, Thomas, Nahant.
Rothwell, James E., Brookline.
Roy, David Frank, Malden.
Ruddick, William H., M.D., South Boston.
Russell, George, Woburn.
Russell, James S., Milton.
Russell, Hon. John E., Leicester.
Russell, Walter, Arlington.

Salisbury, William C. G., Brookline.
Saltonstall, Richard M., Newton.
Sanford, Oliver S., Hyde Park.
Sanger, Mrs. George P., Boston.
Sargent, Andrew Robeson, Brookline.
Sargent, Charles S., Brookline.
Sargent, Mrs. Charles S., Brookline.
Sargent, Mrs. Francis W., Wellesley.
Sawtelle, Eli A., Boston.
Sawyer, Timothy T., Boston.
Scorgie, James C , Cambridge.
†Scott, Charles, Newton.
Sears, Miss Clara E., Boston.
Sears, Miss Emily E., Boston.
Sears, Dr. Henry F., Boston.
Sears, J. Montgomery, Boston.
Sears, Mrs. J. Montgomery, Boston.
Shaler, Nathaniel S., Cambridge.
Sharp, Miss Helen, Boston.
Shaw, Christopher C., Milford, N. H.
Shaw, Francis, Wayland.
Shaw, Mrs. Robert G., Wellesley.
Sherman, William H., Boston.
Shorey, John L., Lynn.
Shuman, Hon. A., Roxbury.
Shurtleff, Josiah B., Jr., Revere.
Sias, Charles D., Wenham.
Siebrecht, H. A., New Rochelle, N.Y.
Simpkins, Miss Mabel, Yarmouth.
Skinner, Francis, Boston.
Skinner, Francis, Jr., Boston.

Sleeper, Henry Davis, Boston.
Smith, Archibald, West Somerville.
Smith, Calvin W., Wellesley Hills.
Smith, Charles H., Newton Highlands.
Smith, Charles S., Lincoln.
Smith, Edward N., San Francisco, Cal.
Smith, George O., East Lexington.
Smith, Thomas Page, Waltham.
Snow, Eugene A., Melrose.
Sohier, Col. William D., Beverly.
Souther, Charles H., Jamaica Plain.
Spaulding, Edward, West Newton.
Speare, Alden, Newton Centre.
Spooner, William H., Jamaica Plain.
Sprague, Hon. Charles F., Brookline.
Sprague, Isaac, Wellesley Hills.
Springall, George, Malden.
Stearns, Charles H., Brookline.
Stearns, Frank W., Newton.
Stedman, Henry R., M. D., Roslindale.
Stevens, Hon. Moses T., Andover.
Stewart, William J., Winchester.
Stone, Charles A., Newton.
Stone, Charles W., Boston.
Stone, Prof. George E., Amherst.
Stone, George F., Chestnut Hill.
Strater, Herman, Roxbury.
Strong, William C., Waban.
Swain, Charles E., Roxbury.
Sweet, Everell F., Malden.

Talbot, Mrs. I. Tisdale, Boston.
Taylor, Charles H., Boston.
Taylor, Horace B., Portland, Me.
Temple, Felker L., Boston.
Tenney, C. H., Methuen.
Thatcher, William, Brookline.
Thayer, Mrs. Alice R., Boston.
Thayer, Bayard, Lancaster.
Thayer, Mrs. Bayard, Lancaster.
Thayer, Eugene V. R., South Lancaster.
Thayer, Mrs. Eugene V. R., South Lancaster.
Thayer, John E., South Lancaster.
Thayer, Mrs. John E., South Lancaster.
Thayer, Nathaniel, Lancaster.
Thayer, Mrs. Nathaniel, Lancaster.
Thayer, S. V. R., Boston.
Thiemann, Hermann, Manchester.
Thomas, W. B., Manchester.
Thurlow, Thomas C., West Newbury.
Tilton, Stephen W., Roxbury.
Todd, John, Hingham.
Tolman, Benjamin, Concord.
Tolman, Miss Harriet S., Boston.
Toppan, Roland W., Malden.
Torrey, Everett, Charlestown.
Tower, Miss Ellen May, Lexington.
Tower, Mrs. Helen M., Cambridge.
Tower, Sylvester, Boston.
Travis, Charles B., Brighton.
Trepess, Samuel J., Glencove, L. I., N. Y.
Tucker, Lawrence, Boston.
† Turner, John M., Dorchester.

Underwood, Loring, Belmont.

Vander-Woerd, Charles, Waltham.
Vaughan, William Warren, Boston.
Vinal, Miss Mary L., Somerville.

Wakefield, E. H., Cambridge.
Walcott, Henry P., M.D., Cambridge.
Waldo, C. Sidney, Jamaica Plain.
Wales, George O., Braintree.
Walker, Miss Mary Sophia, Waltham.
Walley, Mrs. W. P., Boston.
Walsh, Michael H., Wood's Holl.
Waltham, George C., Dorchester.
Walton, Daniel G., Wakefield.
Ward, Francis Jackson, Roxbury.
Ward, John, Newton Centre.
Ware, Benjamin P., Clifton

Ware, Miss Mary L., Boston.
Warren, Samuel D., Dedham.
Washburn, Andrew, Hyde Hark.
Watson, Benjamin M., Jamaica Plain.
Watson, Thomas A., East Braintree.
Watts, Isaac, Waverly.
Webber, Aaron D., Boston.
Webster, Hollis, Cambridge.
Welch, David, Dorchester.
Weld, Christopher Minot, Jamaica Plain.
Weld, George W., Boston.
Weld, Richard H., Boston.
Weld, Gen. Stephen M., Dedham.
West, Mrs. Maria L.. Neponset.
Weston, Seth, Chelsea.
Wheeler, Frank, Concord.
Wheeler, James, Brookline.
Wheeler, Wilfred, Concord.
Wheelwright, A. C., Brookline.
Wheelwright, Edmund M., Boston.
Whitcomb, William B., Medford.
White, Mrs. Charles T., Boston.
White, Francis A., Brookline.
White, George R., Boston.
White, Joseph H., Brookline.
Whitney, Arthur E., Winchester.
Whitney, Ellerton P., Milton.
Whitney, Henry M., Cohasset.
Whittier, George E., Groton.
Whittier, William Benjamin, South Framingham.
Wigglesworth, George, Milton.
Wilbur, George B , West Newton.
Wilder, Edward Baker, Dorchester.
Wilder, Henry A., Malden.
Willard, E. W., Newport, R. I.
Willcutt, Levi L., Brookline.
Williams, Miss Adelia Coffin, Roxbury.
Williams, Benjamin B., Boston.
Williams, Henry Bigelow, Boston.
Williams, John Davis, Boston.
Williams, Philander, Taunton.
Willis, George W., Chelsea.
Willis, Joshua C., Roxbury.
Wilson, Col. Henry W., Boston.
Wilson, William Power, Boston.
Winthrop, Robert C., Jr., Boston.
Wood, William K., West Newton.
Woods, Henry, Boston.
Wright, George C., West Acton.
Wright, John G., Brookline.
Wyman, Oliver B., Shrewsbury.
Wyman, Windsor H., North Abington.

ANNUAL MEMBERS.

Members of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Allen, Charles L., Floral Park, N.Y.
Alles, William H., Chestnut Hill.
Anderson, George M., Milton.
Arnold, Miss Sarah L., Newton Centre.
Atkinson, Edward, Brookline.
Ayres, Miss Helen F., Medford.

Barker, John G., Melrose.
Barr, John, Wellesley.
Bigelow, Arthur J., Eastlake, Worcester.
Bigelow, Mrs. Nancy J., Southborough.
Bird, John L., Dorchester.
Blomberg, Carl, North Easton.
Bock, William A., North Cambridge.
Bolles, William P., M.D., Roxbury.
Boyden, Clarence F., Taunton.
Bradley, Miss Abby A., Hingham.
Braman, George H., Newton.
Breck, Charles H., Newton.
Brunton, Frank, Stockbridge.
Butler, Edward, Wellesley.

Carpenter, Frank O., West Roxbury.
Carter, Mrs. Sarah D. J., Wilmington.
Cary, Miss Alice B., Lexington.
Chase, Joseph S., Malden.
Chase, Philip A., Lynn.
Chubbuck, Isaac Y., Roxbury.
Clapp, Henry L., Roxbury.
Clark, John W., North Hadley.
Clark, Joseph, Manchester.
Clark, Theodore M., Newtonville.
Clinkaberry, Henry T., Trenton, N. J.
Collins, Frank S., Malden.
Comley, James, Lexington.
Coolidge, Dr. Sumner, East Watertown.
Cotter, Lawrence, Dorchester.
Cotting, Charles U., Boston.
Crosby, J. Allen, Jamaica Plain.
Curtis, Joseph H., Boston.
Curtis, Louville, Tyngsborough.

Davis, Frederick S., West Roxbury.
Dawson, Charles Jackson, Newark, N. J.
Derby, William H., Revere.
Dolbear, Mrs. Alice J., College Hill.
Dorr, George B., Boston.
Doyle, William E., East Cambridge.
Duffley, Daniel, Brookline.

Eastman, Edmund C., Brookline.
Eaton, Warren E., Reading.
Endicott, Miss Charlotte M , Canton.
Eustis, William Tracy, Brookline.
Ewell, Marshall F., Marshfield Hills.

Fenno, Warren, Revere.
Fisher, Sewell, Framingham.
Fiske, Harry E., Wollaston.

Fitzgerald, Desmond, Brookline.
Fletcher, Fred W., Auburndale.
Forbes, William H., Jamaica Plain.
Francis, George E., M.D., Worcester.
Fuller, T. Otis, Needham.

Gill, Mrs. E. M., Medford.
Gilman, Hon. Virgil C., Nashua, N. H.
Grant, Charles E., Concord.
Grew, Henry Sturgis, Boston.
Grey, Robert Melrose, North Easton.
Grey, Thomas J., Chelsea.

Hall, Charles H., M.D., Corning, Cal.
Hall, Stacy, Boston.
Hallstram, Charles W., Boston.
Ham, Fernald E., Burlington.
Hargraves, William J., Jamaica Plain.
Harris, Frederick L., Wellesley.
Harrison, C. S., York, Nebraska.
Harrison, Thomas, Melrose Highlands.
Hartwell, Samuel, Lincoln.
Hatfield, T. D., Wellesley.
Hersey, Edmund, Hingham.
Heustis, Warren H., Belmont.
Hill, J. Willard, Belmont.
Hinds, Warren D., Townsend.
Hobbs, George M., Boston.
Hollis, George, South Weymouth.
Houghton, George S., West Newton.
Howden, Thomas, Whitinsville.
Hubbard, F. Tracey, Cambridge.
Huston, Miss Katharine W., Jamaica Plain.

Illenberger, Henry, Brookline.
Ireland, Robert D., Winthrop.

James, Robert Kent, Dorchester.
Jameson, G. W., East Lexington.

Keith, Mrs. Mary R., Washington, D. C.
Kelsey, Harlan P., Boston.
Kemp, William S., Brookline.
Kennard, Frederic H., Brookline.

Lancaster, Mrs. E. M., Roxbury.
Laurie, Robert, Newport, R. I.
Lawson, Joshua, Brookline.
Lincoln, Miss Agnes W., Medford.
Lomax, George H., Somerville.
Loring, Charles G., Boston.
Loring, Mrs. Thacher, Brookline.
Loring, William C., Beverly.
Lothrop, Thornton K., Boston.
Low, Hon. Aaron, Hingham.

Manda, W. A., South Orange, N. J.
Manning, A. Chandler, Reading.
Martin, William J , Milton.
Maynard, Charles, North Easton.
McLaren, Anthony, Westwood.
Meriam, Horatio C., D.M.D., Salem.
Metcalf, Dr. Ben H., Winthrop.
Milman, William, Roxbury.
Moody, Abner J., Boston.
Morgan, George M., Boston.
Morrison, William, Cohasset.
Moseley, Frederick C., Dorchester.
Moseley, Frederick Strong, Newburyport.
Munson, Prof. W. M., Orono, Me.

Newton, John F., Roxbury.
Nicholson, William, Framingham.
Norton, Michael H., Boston.
Norton, Patrick, Dorchester.

Olmsted, Frederick Law, Brookline.

Park, William D., Boston.
Parker, John, Newtonville.
Parker, Walter S., Reading.
Patterson, William, Quincy.
Peirce, George H., Concord Junction.

Petremant, Robert, Brooklyn, N. Y.
Pettigrew, John A., Jamaica Plain.
Pickman, Dudley L., Boston.
Pierce, Mrs. F. A., Brookline.
Plimpton, Willard P., West Newton.
Pray, James Sturgis, Cambridge.
Purdie, George A., Ormond, Florida.

Rea, Charles H., Norwood.
Rea, Frederic J., Norwood.
Rich, Miss Ruth G., Dorchester.
Rich, William E. C., Roxbury.
Rich, William P., Chelsea.
Richards, Mrs. P. D., West Medford.
Robb, Peter B., Whitinsville.
Robbins, Oliver R., Weston.
Robinson, Walter A., Arlington.
Rodman, Miss Mary, Concord.
Ross, Charles W., Newtonville.
Ross, Henry Wilson, Newtonville.

Sander, Charles, Brookline.
Saunders, Miss Mary T., Salem.
Scott, Augustus E., Lexington.
Scudder, Samuel H., Cambridge.
Searles, E. F., Methuen.
Seaver, Edwin P., Waban.
Sharples, Stephen P., Cambridge.
Shaw, Hon. Edward P., Newburyport.
Shea, James B., Jamaica Plain.
Shepard Harvey N., Boston.
Sheppard, Edwin, Lowell.
Southworth, Edward, Quincy.
Squire, Miss Esther A., North Cambridge.
Stevens, Mrs. Mary L., Cambridge.
Stone, Joshua C., Watertown.
Story, Miss Sarah W., Brighton.
Strange, David T., Stoneham.
Sullivan, Michael, Revere.
Sutherland, George A., Roslindale.
Swan, Charles W., M.D., Brookline.

Tailby, Joseph, Wellesley.
Teele, William H., West Acton.
Tobey, Rufus T., Roxbury.
Tyler, Mrs. John F., North Andover.
Tyndale, Theodore H., Brookline.

Vaughan, J. C., Chicago, Ill.

Warren, Samuel H., Weston.
Welch, Patrick, Dorchester.
Westwood, Thomas H., Jamaica Plain.
Wheeler, Henry A., Newtonville.
White, Maurice P., Roxbury.
White, W. Henry, Lowell.
Whitney, Joseph, Cambridgeport.
Whiton, Hon. Starkes, Hingham Centre.
Wilder, Miss Grace S., Dorchester.
Wilder, Miss Jemima R., Dorchester.
Wilkie, Edward A., Newtonville.
Winter, William C., Mansfield.
Wolcott, Mrs. H. L. T., Dedham.
Wood, Mrs. Anna D , West Newton.
Wood, Elijah A., West Newton.
Wood, E. W., West Newton.
Woodford, Joseph H., Boston.
Woods, Henry F., Boston.

Young, E. Bentley, Boston.

Zirngiebel, Denys, Needham.

EXTRACTS FROM THE CONSTITUTION AND BY-LAWS.

SECTION XXII.

Life Members.

The payment of thirty dollars shall constitute a Life Membership, and exempt the member from all future assessments, and any Annual Member, having paid all dues, may become a Life Member by the payment of twenty dollars in addition thereto.

Annual Membership.

Every Annual Member, before he receives his diploma, or exercises the privileges of a member, shall pay the sum of ten dollars as an admission fee, and shall be subject afterwards to an annual assessment of two dollars.

SECTION XXIII.

Withdrawal or Discontinuance of Membership.

Any member may withdraw from the Society, on giving notice to the Treasurer and paying the amount due from him. Any member who shall neglect for the space of two years to pay his annual assessment, after due notice from the Treasurer, shall cease to be a member. The Treasurer shall give notice of such withdrawals, or discontinuances to the Secretary, who shall erase such members' names from the list.

The attention of Annual Members is particularly called to Section XXIII.

HONORARY MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly communicating to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Joseph Maxwell, *elected in* 1830, *and* George W. Smith, *elected in* 1851.

Hon. George S. Boutwell, Groton.

Clarence H. Clark, Ex-President of the Pennsylvania Horticultural Society, Philadelphia.

Joseph Jefferson, Buzzard's Bay.

Major L. A. Huguet-Latour, M. P., Montreal, Canada.

Sir Trevor Lawrence, President of the Royal Horticultural Society, London.

Joseph Maxwell, Rio Janeiro, Brazil.

Donald G. Mitchell, New Haven, Conn.

Hon. J. Sterling Morton, Ex-Secretary of Agriculture, Nebraska City, Neb.

Baron R. Von Osten Sacken, Heidelberg, Germany.

Samuel B. Parsons, Flushing, N. Y.

Dr. Henry S. Pritchett, President of the Massachusetts Institute of Technology, Boston.

George W. Smith, Boston.

Albert Viger, President of the National Society of Horticulture of France, Paris.

Hon. James Wilson, Secretary of Agriculture, Washington, D. C.

CORRESPONDING MEMBERS.

Members and correspondents of the Society and all other persons who may know of deaths, changes of residence, or other circumstances showing that the following list is inaccurate in any particular, will confer a favor by promptly reporting to the Secretary the needed corrections.

Information, or any clew to it, is especially desired in regard to Alexander Burton, *elected in* 1829; S. Reynolds, M.D., 1832; *and* Francis Summerest (or Summerer), 1833.

Édouard André, Editor-in-chief of the Revue Horticole, Paris, France.

George Francis Atkinson, Professor of Botany in Cornell University, Ithaca, N. Y.

Professor L. H. Bailey, Horticultural Department, Cornell University, Ithaca, N. Y.

John Gilbert Baker, F. R. S., F. L. S., Kew, England.

Charles Baltet, Président de la Société Horticole, Vigneronne, et Forestière de l' Aube, Troyes, France.

Peter Barr, London, England.

Archibald F. Barron, Turnham Green, London, W.

Napoleon Baumann, Bolwiller, Alsace.

D. W. Beadle, 303 Crawford St., Toronto, Ontario.

Professor William J. Beal, Agricultural College, Michigan.

Prosper J. Berckmans, Ex-President of the American Pomological Society, Augusta, Ga.

Charles E. Bessey, Ph. D., Professor of Botany in the Industrial College of the University of Nebraska, Lincoln.

Dr. Ch. Bolle, Berlin, Prussia.

Col. Gustavus B. Brackett, Pomologist to the United States Department of Agriculture, Washington, D. C.

John Croumbie Brown, LL.D., Haddington, Scotland.

Professor J. L. Budd, Ames, Iowa.

William Bull, Chelsea, England.

F. W. Burbidge, M.A., Trinity College Botanic Garden, Dublin, Ireland.

Alexander Burton, United States Consul at Cadiz, Spain, Philadelphia

Daniel T. Curtis, Dorchester.

Rev. H. Honywood D'Ombrain, Westwell Vicarage, Ashford, Kent, England.

Sir W. T. Thiselton Dyer, K. C. M. G., F. R. S., Director of the Royal Botanic Gardens, Kew, England.

Parker Earle, President of the American Horticultural Society, Roswell, N. M.

George Ellwanger, Rochester, N. Y.

Henry John Elwes, F. L. S., F. Z. S., Colesborn, Andoversford, Gloucestershire, England.

William G. Farlow, M.D., Professor of Cryptogamic Botany, Harvard University.

B. E. Fernow, Forestry School, Cornell University, Ithaca, N. Y.

Hon. Robert W. Furnas, Ex-President of the Nebraska State Horticultural Society, Brownville.

Beverly T. Galloway, Horticulturist and Superintendent of Gardens and Grounds of the United States Department of Agriculture, Washington, D.C.

Charles A. Goessmann, Ph.D., LL.D., Chemist of the Hatch Experiment Station of the Massachusetts Agricultural College, Amherst.

George L. Goodale, M.D., Professor of Botany, Harvard University, Cambridge.

Henry H. Goodell, President of the Massachusetts Agricultural College, Amherst.

Obadiah B. Hadwen, President of the Worcester County Horticultural Society, Worcester.

Professor Byron D. Halsted, Botanist and Horticulturist at the New Jersey Agricultural Experiment Station, New Brunswick, N. J.

Professor Carl Hansen, of the Royal College of Agriculture, Copenhagen, Denmark.

J. H. Hart, Superintendent of the Botanic Garden, Trinidad.

Dr. F. M. Hexamer, Editor of the American Agriculturist, New York.

J. W. Hoffmann, Colored State University, Orangeburg, S. C.

J. C. Holding, Ex-Treasurer and Secretary of the Cape of Good Hope Agricultural Society, Cape Town, Africa.

The Very Rev. S. Reynolds Hole, D.D., Dean of Rochester, Rochester, England.

Sir Joseph Hooker, K.C.S.I., The Camp, Sunningdale, England.

Josiah Hoopes, West Chester, Pa.

George Husmann, Napa, Cal.

Charles Joly, Honorary Vice-President of the Société Nationale d'Horticulture de France, Paris.

Sir George King, K. C. I. E., M. B., LL. D., F. R. S., Calcutta.

Professor William R. Lazenby, Department of Horticulture and Forestry; Secretary College of Agriculture and Domestic Science, Ohio State University, Columbus, O.

Max Leichtlin, Baden-Baden, Germany.

Victor Lemoine, Nancy, France.

Dr. Peter MacOwan, Director of the Botanic Garden, Cape Town, Africa.

Dr. Maxwell T. Masters, Editor of the Gardeners' Chronicle, London.

George Maw, Benthal, Kinley, Surrey, England.

T. C. Maxwell, Geneva, N. Y.

F. W. Moore, A. L. S., Curator of the Royal Botanic Gardens, Glasnevin, Dublin, Ireland.

Dr. Daniel Morris, C.M.G., D.Sc., M.A., F.L.S , Imperial Department of Agriculture, Barbados.

George Nicholson, Kew, England.

Peter Nøvik, Secretary of the Norwegian Horticultural Society, Christiania.

William Paul, Waltham Cross, London, N.

Professor D. P. Penhallow, Director of the Botanic Garden, Montreal, Canada.

Henry Probasco, Cincinnati, Ohio.

P. T. Quinn, Newark, N. J.

Cavalière Enrico Ragusa, Palermo, Sicily.

D. Redmond, St. Nicholas, Florida.

S. Reynolds, M.D., Schenectady, N. Y.

Benjamin Lincoln Robinson, Ph.D., Curator of the Gray Herbarium of Harvard University, Cambridge.

William Robinson, Editor of Gardening Illustrated, London.

William Salway, Superintendent of Spring Grove Cemetery, Cincinnati, O.

Edgar Sanders, Chicago, Ill.

William R. Smith, Superintendent of the Botanic Garden, Washington, D. C.

Robert W. Starr, Port William, N. S.

Dr. Joseph Stayman, Leavenworth, Kan.

Francis Summerest.

William Trelease, Director of the Missouri Botanic Garden, St. Louis.

Dr. Melchior Treub, Director of the Botanic Garden, Buitenzorg, Java.

H. J. Veitch, Chelsea, England.

William Watson, Curator of Royal Gardens, Kew, England.

Professor L. Wittmack, Secretary of the Royal Prussian Horticultural Society, Berlin, Prussia.

CONTENTS.

PAGE

BUSINESS MEETING, April 6, 1901; Memorial of Agustus Parker, 147. Offer of silver and bronze medals accepted from the Society of American Florists, 148. Communication from the Committee on Native Plants, 148. Disposition of the statues on the Tremont Street Building, 149. Three Members and two Corresponding Members elected, . . . 149

BUSINESS MEETING, May 4; Rate of interest on J. D. W. French Fund, 149. Resignation of W. W. Lunt, Chairman of the Committee on Plants, 150. Appropriation for Committee on Lectures and Publications, 150. Charles W. Jenks appointed a Committee on Native Plants, 150. Twenty-Seventh Biennial Session of the American Pomological Society, 150. Three Members elected, ... 151

BUSINESS MEETING, June 1; A quorum not present, ... 151

BUSINESS MEETING, July 6; Arthur H. Fewkes elected Chairman and R. M. Grey a member of the Committee on Plants, 151. Letters from Professor L. Wittmack and R. D. Cleveland, 151. Weekly Summer exhibitions to be omitted this year, 152. American Pomological Society, 152. Memorial of Edwin C. Lewis, 152. Seven Members elected, . . . 153

BUSINESS MEETING, August 3; Appointment of Nominating Committee, 153. International Conference on Plant Breeding and Hybridization, 153. Letter from Mrs. Jane Lewis, ... 153

BUSINESS MEETING, September 7; Report of Nominating Committee, 154. Delegates to the Twenty-Seventh Biennial Session of the American Pomological Society, 154. Treasurer to provide a place for Annual Election, ... 154

BUSINESS MEETING, September 14; Adjourned Meeting; Certain legal questions regarding passageway, 155. Building Committee requested to report, 155. Decease of George A. Nickerson, ... 155

BUSINESS MEETING, September 21; Adjourned Meeting; Agreement regarding passageway, 156. Report of the Building Committee and new building on Massachusetts Avenue accepted, ... 156

BUSINESS MEETING, October 5; Annual Election, 156-158. Report of the Committee on the Revision of the Constitution and By Laws indefinitely postponed, 157. Committee appointed to celebrate the opening of the New Hall, 157. Appropriation voted for Building Committee, 157. Agreement concerning passageway, 157. Three Members elected, . 158

BUSINESS MEETING, November 2; Appropriations for prizes for 1902, 158. Appropriation for Committee on Lectures and Publications, 159. Furnishings for the Library, 159. Building Committee requested to report cost of new building, 159. One Member elected, ... 159

PAGE

BUSINESS MEETING, December 7; Reports of Committees on Vegetables, Flowers, Plants and Library, 159-160. Schedule of Prizes for 1902 presented. Memorial of Thomas Meehan, 160. Use of Halls tendered to Mass. State Board of Agriculture, 161. Sunday exhibitions, 161. One Member elected, ... 161

BUSINESS MEETING, December 21; Report of Committee on Fruits, 161. Statements from Committees on Gardens and Flowers, 162. Prizes for Timber Trees to be changed, 162. Report of Secretary and Librarian, 162. Sunday exhibitions discussed, ... 162

REPORT OF THE OPENING FLOWER SHOW, ... 163-167

DEDICATION OF THE NEW BUILDING, 168. Address of General Appleton, 170-183. Address of President Hadwen, ... 183-184

DESCRIPTION OF THE NEW BUILDING, ... 185-190

REPORT OF COMMITTEE ON PLANTS, 191-197. Prizes and Gratuities awarded, . 197-205

REPORT OF COMMITTEE ON FLOWERS, 206. Prizes and Gratuities awarded, . 207-215

REPORT OF COMMITTEE ON FRUITS, 216. Prizes and Gratuities awarded, . 217-226

REPORT OF COMMITTEE ON VEGETABLES, 227. Prizes and Gratuities awarded, 228-231

REPORT OF COMMITTEE ON GARDENS, 237. W. W. Rawson's Lettuce House, 237. Peter Fisher's Carnation House, 238. Mrs. David Nevins' Estate, 239. W. H. Heustis' Strawberry Garden, 239. Geo. D. Moore's Cucumber House, 240. Estate of H. H. Rogers, 241. The Oliver Ames Estate, 241. Estate of C. H. Tenney, 242. W. P. Lothrop's Dahlia Garden, 242. Waban Rose Conservatories, 243. Estate of Col. Charles Pfaff, 243. Estate of E. S. Converse, 243. Mrs. A. W. Spencer's Chrysanthemum House, 244. Estate of Frederick Parker, 244. R. & J. Farquhar's House of Begonia Gloire de Lorraine, 245. Prizes awarded, ... 246

REPORT OF COMMITTEE ON SCHOOL GARDENS, ETC., 248. Boys' Gardens in Dayton, Ohio, 248, 249. School Gardens, School of Horticulture, Hartford, Conn., 250, 251. School Garden, Bath, Maine, 252. School Garden of the Twentieth Century Club, Boston, 252, 253. The George Putnam School Garden, Boston, 253-257. Interest in School Gardens increasing, 257. Children's Herbariums, 258-260. Prizes and Gratuities awarded for School Gardens and Children's Herbariums, ... 260-262

REPORT OF COMMITTEE ON NATIVE PLANTS, ... 263

REPORT OF COMMITTEE ON FORESTRY AND ROADSIDE IMPROVEMENT, . 264-265

REPORT OF THE COMMITTEE OF ARRANGEMENTS, ... 266-267

REPORT TO THE STATE BOARD OF AGRICULTURE, ... 268-269

REPORT OF THE COMMITTEE ON LECTURES AND PUBLICATIONS, . . . 270-271

REPORT OF THE COMMITTEE ON THE LIBRARY, ... 272

REPORT OF THE SECRETARY AND LIBRARIAN, ... 273-275

REPORT OF THE TREASURER AND FINANCE COMMITTEE, ... 276-281

MOUNT AUBURN CEMETERY, ... 282-283

OFFICERS AND STANDING COMMITTEES FOR 1902, ... 284-286

MEMBERS OF THE SOCIETY, Life, 287-295. Annual, 296-298. Honorary, 300. Corresponding, ... 301-303

EXPERIMENT STATION REPORTS WANTED.

The Massachusetts Horticultural Society is endeavoring to collect complete sets of the Bulletins and other publications of all the Agricultural Experiment Stations in the United States and Canada. Those named below are wanting, and any person having a spare copy will confer a favor by addressing the Librarian of the Society, Horticultural Hall, No. 300 Massachusetts Ave., Boston.

Alabama (Ag. and Mech. College Station).— Bulletins 4–6 (1884), 7–10 and 1–4 (1885), and 5–9 (1886). 7th Annual Report, for 1894, and 9th, for 1896.

Alabama (Canebrake Station).— All Bulletins later than 18, and all Annual Reports later than the 3d, for 1890.

Alabama (Tuskegee Station).—Bulletin 2.

Arizona. — 4th Annual Report, for 1893.

Arkansas.— Bulletin 1. All Annual Reports later than the 4th, for 1891, except the 8th, for 1895.

California.— Bulletins 32, 1878, and 1, 2, 3, 5, and 50, New Series.

Colorado.— Bulletin 3.

Connecticut (New Haven Station).—Bulletins 1 to 67, inclusive. Annual Reports for 1877 and 1879 to 1883, inclusive.

Florida.— Annual Report for 1892.

Indiana.— (Purdue Univ. School of Ag.). — Bulletin 1. College Reports 1 to 14, inclusive.

Iowa.—Bulletins 54, 55 and 56. (The original bulletins.)

Kentucky.— Bulletin 10.

Michigan.— Special Bulletins 1, 3, and 5. 6th Annual Report, for 1892-93 (contained in Report of Michigan Board of Agriculture, 1893).

Missouri. — Bulletins 9, 13, 15, 16, 19, 20, 25, and 26 of Old Series. All Annual Reports since the 1st, for 1888, except those for 1896 to 1898, inclusive.

New Jersey.— Bulletins 1, 4, 5, 15, 27, and 28.

New Mexico.— Eighth College Catalogue, 1897–98.

New York (Cornell). — 1st Annual Report, 1881–82, and all between that and 1888, except the 2nd, for 1882-83. (Reports of Agricultural Department of Cornell University.)

North Carolina. — Bulletins 1 to 56, inclusive, and 69, 2d ed. 1st to 7th Biennial Reports. Meteorological Division, Bulletin 2 (68*b*). Special Bulletins 1 (77*a*) and 4 (82*a*). Weekly Weather Crop Bulletins 1–21, 1888; 1–24, 1889; 1–25, 1890; 2 and 4, 1891.

North Dakota.— 4th Annual Report, for 1893.

Ohio.— All Bulletins of First Series, except 16, 17, 18, and 19.

Oklahoma. — All Annual Reports previous to that for 1896–97, except that for 1893–94.

Pennsylvania. — Annual Reports for 1869, 1872, 1879–80, 1881, 1882, 1883, and 1884. [All issued by the State College.] Bulletin of Information No. 1.

South Carolina.— All Bulletins of the Old Series (previous to 1888) on the work of the Experimental Farm of the South Carolina College. 3d Annual Report, for 1890, and 6th, for 1893.

Texas.—College Bulletins 1–5, 1883–1887.

Virginia. — 10th Annual Report, for 1898-99.

Washington. — Bulletins 28 and 29. 6th, 7th, and 8th Annual Reports, for 1895–96, 1896–97, and 1897–98.

West Virginia.— Special Bulletin — Potash and Paying Crops, 1890.

Wyoming.—Bulletins 2 to 4, 9, and 10.

Ontario Department of Agriculture, Toronto.—Bureau of Industries. — Agricultural Returns to the Ontario Bureau of Industries, Nov. 1882 (5th), Aug. 1883 (7th), and Nov. 1887 (20th).